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FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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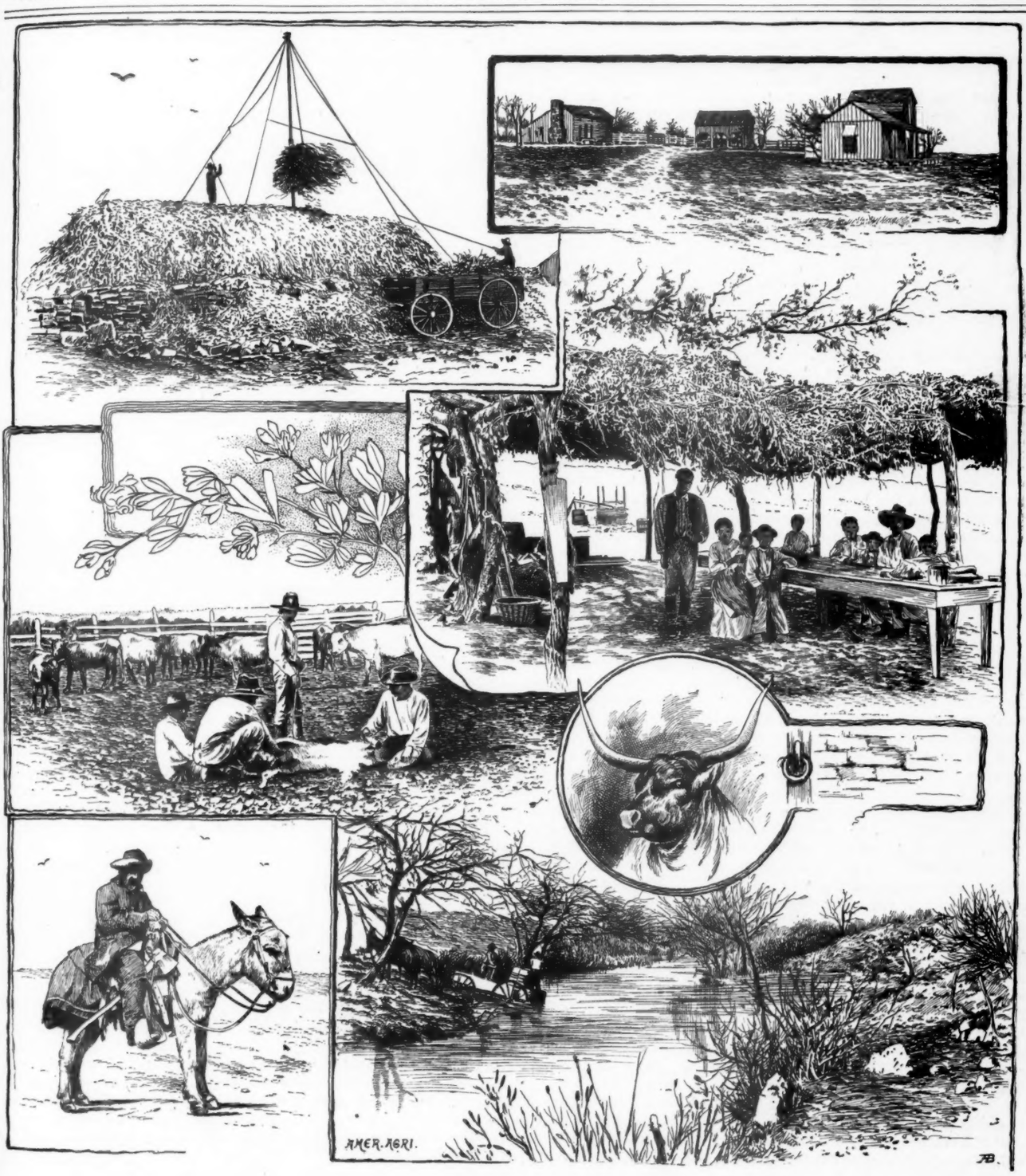

GLIMPSES OF FARMING AND FARM LIFE IN TEXAS.

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FARMING IN TEXAS.

GEORGE WOLFE HOLSTEIN.

IN TEXAS the farmer's work-year begins at sunrise January first and continues until sunset December thirty-first. During all that time the weather permits farm operations, and the industrious farmer will not, unless he wishes it, have an idle day. Rainy days will come, but not often enough to enable one to keep his harness and tools in proper repair. On our ranch we begin with the new year to plow for oats. If hurried in the fall so that we cannot get in all the fall wheat, or barley we wish, we plow for those crops too, sowing not later than the second week in February. A great latitude as to time of sowing fall grain is allowable here, wheat being sown from the first of October to the first of January, and often later. By the time the oats are sown, the corn field is needing the plow; then the sorghum must be sown for hay, stopping long enough to plant the corn by the middle of March. Next the cotton field is planted, and that finished the corn is ready, and probably suffering for want of cultivation. Soon the cotton must be plowed, and before one is half ready wheat harvest is at hand. The small grain harvest over, the sorghum is crowding one, and must be cut. The plow starts in the fall grain fields, and cotton picking begins, to end probably by the first of December. Thus the climate compels a never-ending round of work. There are no barns here, and nearly all the grain is threshed in the field. So far south one would naturally expect extreme heat in summer, but the elevation of this part of the State is 2,000 feet, and the dry atmosphere, with an absolutely constant breeze, so tempers the heat that there is no suffering, not even inconvenience.

There is more liability to drouth than there is near the Great Lakes, or the Atlantic ocean, yet the variety of crops grown is so wide that a total failure is impossible. The yield of small grain is large and fine, wheat especially being of superior quality. Prices are usually about as high as in Chicago, from the fact that so large a part of Texas is devoted exclusively either to cotton or stock raising. Texas is so large a State, with such a variety of soil, diversity of climate and society, that what is true of one part of the State may not be true of another. The writer lives in the section of country west and northwest of Fort Worth.

The counties of Coleman, Eastland, Callahan, Shackelford and Throckmorton lie in the coal-measure limestone, the soil resulting being a rich black or chocolate loam. To the north and west the Permian formation crops out, the soil being of a lighter color and texture, more easily cultivated, but probably of not so lasting a fertility. Still farther to the northwest lie the Panhandle counties, vast treeless plains of the Tertiary age, filled with the fossil remains of great mammals. These are the Staked Plains or Great American desert of our early geographies, but destined to become the granary of America. Destitute of fuel, of natural surface water, far from market, these rich tablelands await the advent of railroads. In all this portion of Texas a large proportion of the land is still devoted exclusively to stock raising, and in a judicious combination of this business with that of ordinary farming lies the high road to success. The natural grasses furnish pasturage for stock the entire year so that every fall the country is full of cattle fit for market. It must not be understood that the grass remains green and growing all winter; on the contrary, the dry atmosphere in the fall cures the grass on the ground into a natural hay which, under ordinary conditions, retains nearly all of its nutriment until grass again starts in the spring.

With so many natural advantages of climate and soil, it may be asked, why is it that Texas has not long ago been settled as thickly as Kansas, for instance. Many causes have contributed to this: Its geographical position had cut it off from the North by the unsettled Indian Territory and Arkansas. It was a slave State and so not attractive to Northern farmers. Its former reputation, as to the state of society within its borders, was not flattering. Every criminal, every scapegrace who left his former home was popularly believed to have gone to Texas, and G. T. T. was written after his name. The supposed typical Texan was imagined to be a tall, sallow, slender, big headed and big spurred individual, with an eight-inch Colt revolver in his hip pocket, a belt full of cartridges around his waist, and murder in his eye. Texas was once a land of long-horned steers, pitching broncos, and reckless cowboys, but it is so no longer.

The county in which I write has no saloon, but in the county town there are five churches. The jail has been tenantless for years, no one troubles himself about locking doors, life and property are so much safer than in the older States as not to bear comparison. The day of the "Longhorn" is gone. Already the pastures are dotted with white faces, and besides the popular Hereford we have Holsteins, Polled Angus and Shorthorns. The small, vicious Texas pony has disappeared, and in his place are thoroughbreds, trotting horses, Percherons, Cleveland bays and French coachers. Ranches or stock farms of twenty thousand to seventy-five thousand acres are, as yet, quite common here, and farther to the northwest they are the rule. The man with the plow is coming, and soon these large pastures will be a memory. Traction engines turning over fifty acres of sod a day are at work as mighty civilizers. A large proportion of the stock farmers are Northern and Eastern men, the small farmers being generally from the Southern and Central States. [Our frontispiece presents views of the Crescent Ranch owned by Holstein Brothers. The middle sketch on the right shows the Mexican laborers at their dinner table; above are typical farm buildings; and at the right, below the head of the steer, men are seen filling a barrel with creek water for home use. On the left, above, is shown the method of stacking sorghum fodder; in the middle a calf is being branded, and below is a sketch of a sheep herder in winter costume.]

THE FUTURE OF WHEAT.

HENRY STEWART.

Statisticians have tried to prove that within five years the value of wheat would be at least two dollars a bushel, and that this price would be reached by gradual advances from now onwards, until the consumption of it would overtake the production and then surpass it, thus giving the wheat grower the absolute command of the markets of the world. It is doubtful if any farmer was deluded by this roseate view of the position of the wheat grower, for every intelligent person knows that the reserve of land suitable for the culture of wheat within the boundaries of North America alone is sufficient to more than double the present product, without even any improvement in the cultivation of this crop. And certainly every farmer knows that if the right methods were taken the present product might be easily doubled without adding a single acre to the area now under this crop. For, while the average product of wheat is not more than eleven or twelve bushels per acre, there are many farmers who produce three times this yield, and what these farmers are doing others may and can do if they will only use the same methods.

But if we look abroad we find the very same conditions prevailing over enormous areas of territory suitable to the growth of wheat. There is that vast stretch of fertile land known as the Northwest Territory of Canada, and which is only now being simply touched by the plow, but when fully occupied may produce not less than two thousand million bushels of wheat, which is about the whole product of the world at this time. The farms of Europe may be wholly left out of the calculation, and only the at present undeveloped fields taken account of. And these will include Australia, a greater part of Africa, and the vast area of Argentina just now opened to this enterprise, with other parts of South America that will yield the best quality of this grain. And to make our story as short as possible we may confine ourselves to Argentina alone.

Here are two hundred and forty million acres of fine wheat lands, that two years ago no one thought of as wheat exporting territory. Indeed only a few years back this great country procured its supplies of wheat and flour from the United States, but last year it exported twenty million bushels as a beginning, and the present season expects to have a surplus of fifty million bushels for export. And by the use of the most improved machinery and large enterprise, wheat is now grown at a good and indeed attractive profit for twenty-five cents a bushel, which is about the cost of it in the Canadian Northwest Territory and the Dakotas. At only ten bushels an acre here alone is a doubling of the world's product.

At the present time Canadian wheat is being carried from Winnipeg, in Manitoba, to England for twenty-eight cents a bushel, and the wheat of Argentina can be laid down in the same market for fifty cents a bushel. Considering these vast fields and their possible, not to say probable or certain products, in the near future, what is then the position of the American farmer? He must grow wheat, or change entirely his rotation and system of farming. The pivot on which his rotation revolves is wheat, and he cannot abandon it. Then he must make up his mind to compete with these foreign wheat growers and meet them on equal terms. And doubtless he will be able to do this and produce this grain for twenty-five cents a bushel, when he adopts the indispensable improved methods of culture by which the yield may be made to reach forty bushels to the acre. And this seems to be the present view of the future of wheat that must be taken, and indeed that presents itself to the American farmer.

UTILIZING THE CORN PLANT AS FOOD.

R. M. BELL, ILLINOIS.

It used to be the custom in Central Illinois to raise corn simply for the grain. There were farmers who cut the stalks and shocked them for fodder to be fed to farm animals during the winter. Such farmers as came from the Southern States used to cut off the stalks above the ears and bind into bundles for winter roughness for cattle to be fed out of doors. They also pulled the blades from the ear down and carefully secured this fodder by binding into bundles and storing under shelter or putting it in stacks. This "blade fodder," as it was called, made a very desirable roughness for horses. When the time came to gather the corn the ears were "jerked," husk and all, put into cribs and shucked during the winter as wanted. The shucks were regarded as good forage for horses and cattle. This careful, painstaking method of securing a corn crop was not generally practiced by farmers who came from the Eastern and Middle States. It was found that corn, so easily and cheaply grown, was a profitable crop when the grain alone was considered. Roughness was supplied by hay, by pasturing the cornfields after the corn was gathered and by the great supply of wheat straw which was stacked in immense ricks so stock could run to it all winter and find shelter while eating what they could of it.

As better and more economic methods of farming prevailed, and domestic animals were more carefully bred and managed, it became apparent that greater uniformity and regularity in feeding stock was needed. Corn fodder was well suited to feeding out of doors, especially when the ground was dry and the weather fine, but for barn feeding it was not satisfactory; its cheapness and quality were, however, greatly in its favor. Another objectionable feature of corn fodder in Illinois worthy of mention is the inconvenience of hauling from the field in winter when the ground is soft. Some one would say, all winter feed should be under shelter. This is true, but corn fodder is an exception to this good rule here in the West. It is too bulky and inconvenient for such treatment. However, as time goes on and the margin of profits becomes smaller and competition becomes more severe, it is imperative that more economic practices be found. Cheapness becomes a very potential factor of profit in stock raising. Corn fodder contains valuable food constituents, two pounds of stover or fodder equals one pound of ear corn or cob meal. It follows that the waste or loss of the butts by the stripping and topping method of harvesting is a loss of food material. The field-cured stover, in a fairly good field of Virginia corn, will weigh from two to three tons to the acre. The portion so commonly wasted—the butts and most of the mid-stalk —represents from twenty-five to thirty per cent. of the entire fodder, or, to be quite moderate in estimate, at least twenty per cent. after all the saving possible, by allowing the stock to run in the stalk field. This is one-fifth of the whole stover, or from 800 to 1,200 pounds of final waste per acre, an average of half a ton per acre. According to previous comparison on the basis of the chemistry of food, this half ton of butts equals (approximately) 400 pounds of corn meal, or six and one-half bushels of corn. On this basis of calculation the annual loss to corn raisers who followed the old ways was formidable, and the aggregate was almost beyond calculation.

The practice of ensiling offered a complete method of utilizing the corn plant, and it deserves the attention of every farmer. The latest, and in many respects the least objectionable, method of getting out of a corn crop all there is in it, is the cutting and crushing of the corn fodder. In this the corn is cut up into small bundles and shocked, to remain in the field until the corn is dry enough to go into the crib safely. The saving is very great, and this way of managing a corn crop is becoming more and more common here in Illinois. Shredded corn fodder is baled and put on the market and is valued highly by people who keep cows in town. When thus shredded and baled a corn crop can be stored and kept for an indefinite period of time without loss, and is likely to become popular in the markets as well as with farmers.

VARIATION IN DAILY MILK AND BUTTER PRODUCTION.

E. H. FARRINGTON, ILLINOIS AGRICULTURAL EXPERIMENT STATION.

The quantity of milk produced by a cow, and the quality of the milk are influenced directly by the individuality, and indirectly by the breed of the animal. Each breed is only a group of individuals of the same kind. The breeds differ from each other by certain characteristics which are preserved so long as conditions are not sufficiently strong to change them. To the distinct characteristics belongs the disposition to produce a large quantity of milk, or milk possessing a specific peculiarity, such as high content of butter fat and casein.

Numerous observations show that with nearly all cows the milk production follows the general course of decreasing in quantity of milk and butter, and increasing in percentage of butter fat as the period of lactation progresses. By weighing and testing the milk of cows every day the writer has observed that lines representing the daily production of milk and of butter fat do not take the course of a straight line down an inclined plane, but are broken, zigzag lines. Some of the results of these observations have been represented graphically in Bulletin No. 24 of the Illinois Experiment Station. They show the production of the cows from day to day, and are evidence to illustrate: First, that the variation from day to day in the morning's and evening's milk considered separately was greater than in the mixed milk of the day. Second, that under exactly the same conditions cows differ from each other in the amount of this variation. A very nervous and somewhat vicious animal goes to great extremes, while a mild eyed "mooly cow" produces milk comparatively uniform in quantity and quality from day to day. Third, that the mixed milk of several cows is more uniform in amount and richness from one day to another than the milk of one cow.

The record of each milking of one cow shows the general tendency to equalize the milk production by going to both extremes. May 19th a cow gave 12.75 pounds of milk in the morning, and seven pounds at night. The morning milk contained 6.5 per cent. of butter fat, the night milk only two per cent. The average per milking of this cow for three months has been 9.35 pounds of milk and 3.92 per cent. of fat. In general, it was noticed that in this record when one milking was above the average in quantity and quality, the next milking went below, and *vice versa*. During this experiment the daily quantity of milk of one cow from both milkings varied from twenty-three to seventeen pounds, the per cent. of butter fat in the daily milk from three to 6.1, and the pounds of butter fat in the daily milk from 0.56 to 1.29. The daily record of another cow shows a very uniform per cent. of butter fat, varying only from 2.8 to 3.4. The same regularity is seen in the total daily production of butter fat, 0.65 to 0.42 pounds; and the record shows that the course of the line representing the pounds of butter fat gradually declines from the beginning to the end of the experiment. A decrease in the pounds of milk from day to day is also shown in the record of this cow.

One of the cows is a striking example of occasional extreme variations in milk production, and, contrary to the general statement, the variation in quantity and quality coincide. That is, when she gave a small mess of milk it had a per cent. of butter fat below her average, while the largest milkings were of her richest milk. This does not hold true in the average per cow calculated from the daily records of three cows, for the reason that the milk of cow No. 1 showed just the opposite tendency from cow No. 2. Nearly every time when the milk of cow No. 1 increased in quantity it decreased in percentage of butter fat, and as the pounds of milk per day decreased the per cent. of fat in the milk increased. The milk was richer. The record of cow No. 3 on this point shows a very uniform percentage of butter fat from day to day regardless of the quantity of milk produced. These individual characteristics may be more concisely stated thus:

Cow No. 1. The richest milk is given when the quantity is small. The quantity decreases somewhat with this cow.

Cow No. 2. The richest milk is given when the quantity is large. The quantity did not permanently decrease with this cow.

Cow No. 3. The richness of her milk was very uniform, and changed but slightly. The quantity decreased permanently.

By comparing the separate records of these cows with the average per cow calculated from the total production of the three, we find a greater irregularity in the production of a single cow. This shows that the greater the number of cows in a dairy, the more uniform will be the production from day to day.

ALFALFA ON THE GREAT PLAINS.

D. E. FULLER, KANSAS.

There are many advantages in growing alfalfa clover or lucern for fodder and seed in that vast region west of the ninety-fifth meridian, which has an annual precipitation of only ten to forty inches. The soil of these great treeless plains is of such a porous nature that the surface water is readily absorbed, and freezing and thawing will not throw out or heave the long taproots of this plant as the soils further east will do. Nothing injures it after it is thoroughly rooted excepting gophers, which burrow in the ground and cut off the roots. Drouth, grazing, and frequent mowing do it no material damage. It should be sown in the North not later than the first of May, at the rate of at least one-half bushel per acre, in a very finely pulverized seedbed, evenly spread on the ground and thoroughly harrowed in and rolled. The first summer is the most trying time to the young alfalfa plant, but when the taproots have become the size of the little finger, they have reached a depth of at least two feet, which in ordinary seasons they will do the first year.

Alfalfa grows upright, and seldom lodges like red clover. The stem is smooth and slender, and the growth thick and luxuriant; the flowers are purple and very fragrant, the pods spirally twisted, with seed about the size of red clover. No other known plant will fatten stock as rapidly as this, or produce as much forage in one season per acre. It can be cut two or three times for hay and once for seed. Three to four tons per acre is a common yield, and it never sells for less than eight dollars per ton. It produces five to ten bushels of seed per acre, selling for about five dollars per bushel.

Last summer was very dry for Kansas, but my neighbor had a twenty-acre pasture of alfalfa. In May he turned two hundred head of hogs into this lot, and allowed them to remain there without anything else to eat, but they had plenty of pure water to drink. He took them out in October, when they were fat enough for market and had gained an average of one hundred pounds each, netting him a trifle over $1,000 profit from his twenty acres. He has one hundred acres, and says for the last five years it has paid him over forty dollars per acre. There is little danger of overstocking the market with hay, as three tons of hay, cut in full bloom and well cured, will fatten a steer as well as eighty bushels of corn, and many alfalfa-fed cattle are graded in the market as corn-fed.

LATE-PLANTED CROPS.

D. WEBB.

The usual reason for delaying the planting of a crop is because the season is backward, a matter which man cannot control, or because the land is wet, and is slow in getting into a sufficiently dry condition to plant. It is, of course, possible that press of farm work, by trying to do more planting than one has facilities for doing well and quickly, causes some pieces of ground to be left until the season is far advanced, but, whatever is the cause, it manifestly becomes necessary to make everything bend to the rapid growth of the crop after it is planted. It is unfortunate that the very cause, wet, cold land, which operates to keep crops from being planted in good time, operates also to keep them from growing rapidly after they begin to germinate, for land that is wet and heavy in the spring is not, without great effort, put in such order as to provide the most perfect seedbed. The man who plants late must take special pains. The soil must not be touched until it is dry, for nothing is gained, but much lost, by attempting to work a wet soil; but when once the soil is in a condition to work, it should be so thoroughly tilled as to make the seedbed fine and light, for this will assist germination, and will let in the air and sunlight, to carry forward the chemical changes that provide the growing crops with food. Teams should be kept off wet land, but surface drains can often be made that will hasten the process of drying, thus providing a temporary expedient against the time when the wet field can be tile-drained, when late planting will not be necessary. Thorough mechanical preparation and care of the soil is needed in giving late-planted crops a start, and for the purpose of maintaining a steady and rapid growth, but even where the land is fairly well dressed, it is advisable to make use of some concentrated and quick-acting fertilizer at the start, that the crops may be able to make up, to some extent, for lost time, that full maturity may be had before the arrival of the early fall frosts, and for this purpose some reliable commercial fertilizer, poultry dressing, or some specially well preserved and well rotted barn dressing, will be found most excellent. Coarse stable manure, as food for late-planted crops, is decidedly unsatisfactory.

CULTIVATION AND CARE OF THE FRUIT GARDEN.

DR. GEO. G. GROFF, PENNSYLVANIA.

After fruit trees have been planted they should be thoroughly and frequently cultivated. In short, the fruit garden should be worked in much the same way as the farmer works his corn or potatoes when he desires an extra fine crop. The trees should be cultivated for four or five years, when after this time the ground may be seeded in clover, but the small fruits must be cultivated every season, early and late, and the ground kept entirely free from weeds, if good crops are desired. While trees and bushes are small, the ground between the rows may very profitably be occupied by summer crops of vegetables, as potatoes, cabbage, or sweet corn, the only precaution to be remembered being to replace with fertilizer all which such crops may extract from the soil.

The best plan of pruning trees is to remove a branch whenever it is seen to be out of place or to be crowding others. The earlier this is done the better, as it will produce less injury to the tree. There is probably not much difference as to the time when a regular pruning is given the orchard. Some prefer the spring to the autumn or winter. Possibly the early spring is the safest time for this work. Pear trees need very little pruning, and cherry trees do not endure severe pruning. Suckers must be carefully removed from the apple trees. Peach trees may have from one-third to one-half of each year's growth removed with profit every spring. Peach trees, like grape vines, stand a good deal of pruning and are benefited by it. Raspberries, blackberries, gooseberries and currants all do best when thoroughly pruned. Stakes are unnecessary for any of these bushes if the young shoots are cut off when they reach the height of two or three feet. Extra fine crops are to be secured only through a liberal use of the pruning knife. The soil in the fruit garden should be fairly good before the trees have been set. Afterward stable manures should not be used in large quantities except on the berry bushes. Wood ashes, bone dust, and the salts of potassium will give the best results applied to grapes, apples, pears, peaches and plums. These plants are little benefited by stable manure, as wood is produced at the expense of fruit.

Many persons do not grow fruit on their farms, thinking that it is no longer possible to control the ravages of insect pests. In this they are mistaken, for at present almost every form of insect may be quite perfectly controlled. The fruit trees should be examined every spring for the eggs of caterpillars, and then by scraping the earth away for a few inches around the trunk of each tree, search should be made for borers. If the ground is kept loose and free from weeds about the trunks of trees, and heaped up three or four inches at the base of each trunk, there is usually very little trouble from borers. The currant worm is easily combated by dusting both the currant and gooseberry bushes with powdered hellebore. This substance destroys the worms completely, and is not poisonous to human beings. For the curculio and the codlin moth, the best treatment is to spray the trees just after the blossoms fall in the spring, and two or three times subsequently during the growing season. In this way these pests can be kept in control. Some growers still practice jarring the insects off the trees upon sheets spread upon the ground to receive them.

Plant More Grapevines.—Contrary to the general opinion, grapes may be readily grown over the greater portion of the United States. In villages, they do well trained to trellises placed against the house. In the fruit garden, they should be planted eight feet apart in rows. Plants one year old should be purchased. The first year they may be fastened to a stake, or be permitted to grow lying on the ground. After this a trellis four or five feet high may be constructed of posts and strands of wire. Grapevines need frequent and clean culture, and thrive best when fertilized with bonedust and ashes. Stable manures promote a growth of wood, rather than of fruit. It is absolutely necessary to prune grapevines each year, if much fruit is desired. Spray the vines for fungus diseases.

AN OBJECT LESSON IN SPRAYING FRUIT TREES.

C. E. CHAPMAN.

The codlin moth renders one-third of the apple crop unfit for market. The wormy apples are worth but little more than the cost of harvesting, for feeding purposes, and a good deal of time is wasted in sorting them out of those fit to barrel. The buyer disparages the fruit and tries to buy it cheaper on account of their presence, although he does not intend to allow one of them to go into the barrel. Why have them at all, when it is so easy to prevent their ravages, and the process of accomplishing it is so simple? Poison the worm before it enters the apple, which is done by placing Paris green on its food. If the poison is washed off by rain before the worms hatch out it must be replaced. The apples point upward until after the blossoms fall, and the cup-shaped end catches the tiny drop of water which carries the poison with it. The most effective spraying is done at this time. The only caution to be observed is not to use too much poison, as this would injure the foliage. One pound of poison to two hundred gallons of water is sufficient. The addition of one pailful of fresh slaked lime to each fifty gallons of water avoids injury to the foliage, and is an aid in preventing washing off by rain. The lime clogs most of the ordinary nozzles, which has been a bar to its use; but by the use of an automatic nozzle there is no trouble. Should any coarse piece of lime or grit obstruct the passage, the spring is forced up and the opening is enlarged so that the obstacle can fly out, when the spring pushes the parts back in place as before. Last spring the lower part of one side of a Rhode Island Greening tree was sprayed at the time the blossoms were falling. About one-sixth of the tree received enough of the spray to wet it thoroughly. There was no hard rain for several weeks, and a second spraying was not needed. At harvesting time the branches of the sprayed portion were bent to the ground, as shown in the engraving herewith. A good many defective apples had fallen from the unsprayed part of the tree during the summer, and are not included in this report. A careful count gave the following result:

PARTLY SPRAYED APPLE TREE.

	Sound Apples.	Wormy Apples.	Bushels Sound.	Bushels Wormy.	Value.
Sprayed,	534	48	4	1-4	$3.00
Unsprayed,	216	92	1 1-2	3-4	1.12
Whole tree if sprayed,			24		18.00
Whole tree not sprayed,			1 4-5		1.35
Balance in favor of spraying,					$16.65

The sprayed apples were larger, of a better color, and freer from scab. It required 144 apples of the unsprayed, and 133 of the sprayed for a bushel. There was a noticeable difference in the color and smoothness of the sprayed fruit which I cannot account for, unless it be perfect healthfulness of foliage and fruit, as I have never seen the above effect claimed as a result of using Paris green alone. The results obtained from three seasons' experiments make me a firm believer in the efficacy of spraying with Paris green and the Bordeaux mixture to produce sound fruit. No fruit grower can afford to neglect such cheap methods of insuring his fruit against attack by insects, worms and fungi.

SPRAYING FOR THE PLUM CURCULIO.

G. C. DAVIS, MICHIGAN AGRICULTURAL COLLEGE.

The use of Paris green and London purple for the plum curculio is still somewhat questionable, yet it seems to be generally conceded now that these arsenites are of considerable value in protecting the crop of plums and cherries. The remedy will probably never be entirely satisfactory at all times, but from experiments made by others and from our own tests, it is very certain that at least some of the curculio are killed by the poison. Several of the experiment stations and many extensive fruit growers have tested the spraying method. While some of these claim complete protection, others feel that they can find a safer protection by some other means and appliances. The experiments were conducted with the curculio in partial confinement, where results could be more definitely determined. With this in view, we used an orchard of bearing plum and cherry trees. After the stung fruit was picked off and the remaining fruit counted, part of the trees were sprayed and part were left unsprayed. We covered the trees with cheesecloth and fastened it as tightly as possible. A certain number of curculio were introduced into each enclosure and left for about a week, when they were taken out and the results noted. The summary of the work is this: Of the unsprayed plums and cherries a little over seventy-five per cent. were stung, or, in other words, more than three-fourths of all the unsprayed fruit was stung. Of the trees that were sprayed, there were only half as many stung plums, or about thirty-eight per cent. No dead beetles were found under the sacking of the unsprayed trees, while where the trees were sprayed, twenty-eight per cent. of all the curculio found were dead. Some escaped confinement although we used all possible precaution. This makes it evident that the arsenites are a help in protecting the fruit, and that the curculio are poisoned by it.

To test the longevity of curculio under such circumstances, we confined several lots in glass jars under as nearly normal conditions as possible, and found that it took them from two to three days to die after being poisoned. The beetles are so tenacious of life that

they do not succumb quickly to the poison, and during this time may sting many plums. If we take the usual estimate of from five to ten eggs a day deposited by the female, we may forecast what the tardy effect of the poison may produce where the curculio are very numerous, or fruit scarce.

To illustrate how easily we may be deluded to consider spraying an ideal remedy, an instance might be given from our own work. In an orchard of some three hundred plum trees, two rows were jarred, two dusted with carbolized lime, and the rest sprayed. Although the trees were jarred for three weeks, only two curculios were caught, and very rarely was a crescent found anywhere. The year before, fruit was scarce and the curculios took everything in spite of all that could be done. Had all the trees been sprayed and no check trees used, the success would have been sufficient to enthuse many with the idea that no remedy could be better, while in reality spraying did no good.

From a general review of our own experiments and those elsewhere, it seems quite evident that if a large crop of plums set and the curculios are not extraordinarily numerous a good yield can be saved by spraying. On the other hand if only a moderate crop set and the curculios are very plentiful, the fruit grower will probably be disappointed if he expects a very large share. Through a series of years, spraying will probably protect the fruit sufficiently for a moderate yield the greater part of the time. If the orchardist depends upon spraying alone, he must expect to run some risk. The question seems to be which is the more desirable, to run the risk in spraying or resort to the laborious mechanical means used as the alternative. My choice would be spraying, with recourse to jarring in case the spraying was likely to fail. If spraying is adopted, the trees should be sprayed three or four times, about ten days apart, applying the first as soon as the blossoms fall. One pound of the London purple, or Paris green to two hundred gallons of water is all that is necessary. Always use these arsenites in lime water, or Bordeaux mixture if possible, as this will precipitate the soluble, or injurious, part of the poison and so insure the foliage against injury. A pound or two to each pound of the poison is all that is necessary, but more will do no harm. It must be slaked to combine with arsenic, and should then be strained so that the impurities may not clog the pump and nozzle. The Bordeaux mixture should be used wherever the plum rot is present. This combines a fungicide and an insecticide in one application, and is becoming a favorite combination. The mixture is composed of lime and copper sulphate or blue vitriol, in about equal parts. The arsenites ought never to be used on tender foliage without lime in one of these forms to prevent burning.

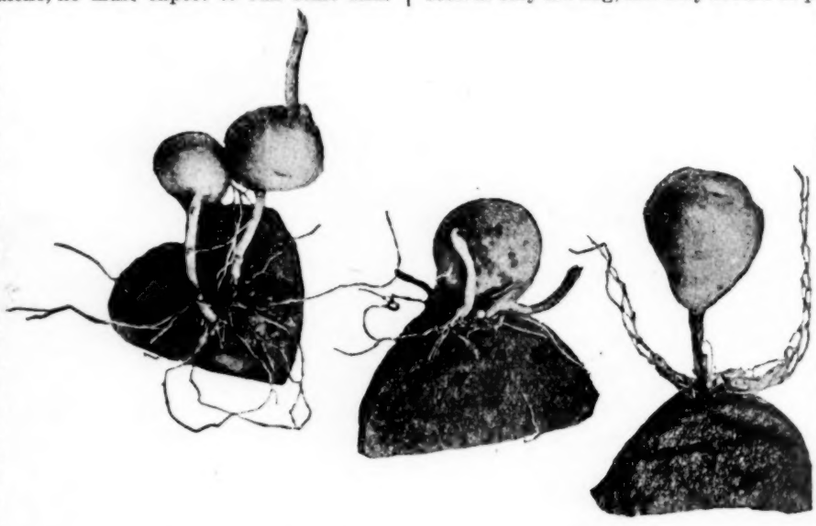


Fig. 1. NEW POTATOES DIRECTLY FROM SEED.

THE IDEAL PEACH ORCHARD—HOW TO SECURE IT.

J. S. WOODWARD

No other fruit depends so much upon the treatment as the peach. During the first part of the season the peach tree should have much vigor and make healthy growth, and then it should ripen up its wood and buds so as to withstand the rigors of winter, even if the temperature go to sixteen or eighteen degrees below zero. With these conditions assured it is advisable to cultivate the newly set orchard for the first two or three years with some hoed crop. Nothing is better for these than corn for the first year, potatoes for the second, and beans for the third year. But it must be kept in mind that two crops on the same ground the same year will require more manure than one, and that if this double call upon the soil is made, enough plant food must be applied to meet the requirements of both the trees and the planted crop. Without the manure this double cropping is wasteful, but with a liberal hand in manuring, especially with bone dust and ashes, or muriate of potash, the trees will take no harm. They will in fact be better, and make a healthier growth with the crops and the manure than without either.

The peach orchard should be well worked in all cases, and it will be scarcely more labor to till the land with the hoed crop than without it. Suppose five dollars per acre be allowed for this extra labor and that the whole value of the crop grown, less this amount and the seed, be applied to the soil in suitable manure. The conditions at the end of the three years would be as follows: With the application indicated the corn would yield not less than fifty bushels of shelled corn per acre, and this with the stover would certainly be worth thirty dollars. The potatoes would give two hundred bushels and be worth eighty dollars, and the beans give twenty bushels, worth with the haulms thirty dollars, making the aggregate for three years one hundred and forty dollars, or one hundred and twenty-five dollars above the cost of labor. For this amount there could have been applied at least one and one-half tons each of bone dust and muriate of potash, and three-fourths of a ton of cotton-seed meal. This would certainly leave the land in much better condition than it was before the crops were grown on it.

Each year, in addition to the fertilizers named, the orchard should be sown to rye; or, in situations so far south that it will endure the winter, crimson clover may be sown instead. With the corn, sow rye at the last cultivation. With potatoes, sow the rye as soon as they are dug, and they should be planted early so as to come off not later than October 1st. Rye should be sown as soon as the beans are harvested. Of course the rye should each year be plowed under in time to fit the ground for planting the succeeding crop, preferably as soon as it shows heads, putting it all beneath the furrow by using a chain on the plow, and plowing as shallow as possible. No crop should be grown in a peach orchard after the third year. The orchard should now have thorough shallow cultivation until the middle of August, at which time it should be sown with rye and oats, half and half, and six pecks per acre. The treatment of this fourth year should be repeated each year so long as the orchard is kept, and each year it should be given at least five hundred pounds each of bone dust and muriate of potash per acre. This course will maintain the fertility of the soil, insure strong, vigorous growth during the spring and early summer, furnish abundant food for the growth of pit and kernel, and cause the trees to ripen up fully for winter. Several years ago I sent a drawing to the manufacturers of the Cutaway harrow, after which they made me a harrow having a long beam or spreader so that the sets or gangs of discs could be separated to any distance apart up to eight feet. Of course this would leave a strip in the middle unworked, but its great advantage was that it worked the ground thoroughly close up to the body of the tree while the team did not go close enough to injure the top. The other part could be worked by an ordinary harrow, or, after all the orchards had been gone over, the implement could be narrowed up, and the rest cultivated.

Of course the fruit should be carefully thinned, so as to insure only large, perfect peaches. One basket of small peaches will contain as many in number as two baskets of large ones, and as the formation of pit and kernel is what saps the vitality of the trees, small peaches draw as severely on the tree as the same number of large ones, and one basket of the larger will sell for more money than two or three of the smaller. For the past few years we have spent a good deal of time in thinning our peaches, and have grown only large ones. We have also taken great pains in putting our peaches up for market, and with the first class we have put a card guaranteeing quality. The result has been that we cannot now supply all of our orders, and we secure prices that astonish our neighbors. Verily in no crop will thoroughness pay so largely as in peaches.

NEW POTATOES DIRECTLY FROM THE SEED SETS.

DR. B. D. HALSTED, NEW JERSEY EXPERIMENT STATION.

Last spring a large grower of potatoes in New Jersey made complaint to the Experiment Station that his potatoes "came up"

FIG. 2. SECONDARY TUBERS WITH SPROUTS.

badly. Specimens were received and examined, and afterwards a visit was made to the fields. This was fully a month after planting, and the ordinary plants were a foot high.

About ten per cent. of the seeds had failed, and the field presented a very "ragged" appearance. The potato seed had been cut by machinery, and as a consequence there were some "blind" pieces which should be charged with some of the blank hills; but these were not enough to account for all the trouble. Many vacant hills were dug into and the sets were often in the condition shown in Fig. 1. That is, the seed had developed a short stem from one or more eyes, and these stems terminated shortly in a small new potato varying from a half to a full inch in diameter, these shown in the engraving being somewhat reduced. Many plants were found with the tips of their stems just appearing above the ground. Upon digging up such plants the reason for this dwarfed condition was found, as shown in Fig. 2. In addition to the formation of the secondary tubers, as shown in Fig. 1, these young potatoes had developed, from their free end, stems which had grown upward and reached the light, as above mentioned. This second form may be considered as a more advanced condition of that shown in Fig. 1. A third form of abnormality was noticed among the feeble potato plants. This was the formation of the small potatoes directly from the seed, as presented in Fig. 1, and in addition, the production of normal shoots from other eyes upon the same pieces, as shown in Fig. 3.

The formation of new potatoes directly from old ones is not a new observation; but it is rarely met with in the field to any serious extent. English gardeners have grown new from old potatoes in a commercial way without the formation of tops. The old tubers kept through the summer in a dry, cool place, and with all sprouts removed, were placed in boxes of sand and set where the temperature is uniformly sixty degrees. After three months a crop of new potatoes will have formed from the old ones, with no vines above ground. Sometimes new potatoes will form inside of old ones because they started below instead of outside of the skin of the old potato. It is not easy to determine the exact reason for the formation of the potatoes in the case under consideration. It needs to be remembered that the potato forms its starch in the green parts of the plant, transfers this below ground to the tubers, which are swollen stems bearing buds or "eyes." When these eyes or side shoots develop they may use the nourishment stored in the old potato for the production of a long stem, much branched and leafy, as the ordinary potato plant, or, if the potato is in a dark cellar instead of the soil, a very slender and prolonged stem may result. The opposite to this latter is the short stem terminating in a swollen tip, as shown in Fig. 1. There is no new structure introduced, but an unusual form of the common one. So uncommon is the form shown, that one of our best authorities upon potatoes and potato growing wrote that he was "entirely at a loss to understand what was the matter with the potatoes." One or more of several conditions may have induced the formation of the young tubers without the intervention of foliage. Anything that might weaken the seed before planting might lead to the failure of the seed in the manner complained of. Immaturity might be the cause, or unfavorable surroundings after maturity, as being frosted or kept too warm and having sprouted before planting. Such tubers thus weakened might take the shortest path towards reproduction. It is also possible that perfect, healthy tubers might form direct potatoes, because of unusual conditions that obtained after planting. Should the soil be dry and warm, the eyes might push and form a tuber near by, there not being moisture sufficient for anything more. The pieces of potato used for planting are unlike seeds in having no embryo to unfold, but instead a short stem to grow and use up the substance in the old tuber, as conditions may determine. Between the perfect repose of the eye of a potato and the normal deeply-rooted, leafy-stemmed plant, there may be many gradations, and the most exceptional has here been considered. One variety may be more inclined to produce these young potatoes in the manner indicated than another, because lacking in inherited vitality or predisposed to sprout early before planting time, and thus exhaust the tuber. As a potato is really an underground branch, and the eye from which it develops is a bud, the new potatoes which set grow in an upward direction.

FIG. 3. TUBERS DIRECTLY FROM SEED, AND NORMAL SPROUTS.

True roots will be found in abundance, as shown by the accompanying photo-engravings, but these come not from the body of the tuber, but from the lower scales of the eye or bud. As buds grow in the axils of leaves, there will be found an undeveloped leaf or scale extending over the eye or bud in the very young potato.

SHEEP AND EARLY LAMBS.

A. W. HARROLD, OHIO.

On account of hard times and low prices for wool, many farmers are disposing of their sheep as rapidly as a glutted market will permit. But there is still hope for the farmer who holds to his sheep. The present low prices of sheep may cheapen mutton to such an extent that many consumers of meat will become confirmed mutton eaters, establishing a permanent demand for this excellent meat at fair prices. Sheep raising, for mutton alone, may be made profitable, if rightly managed. There is a marked difference in breeds, and by judicious crossing upon existing stock good strains may be obtained. Total restocking is not necessary in changing from wool to mutton, as all young, fat sheep make good mutton.

For early and profitable market, lambs should be dropped in February or early March. This will give them a longer period to mature, add weight to the carcass and be more easily fattened, finding good sale before late lambs are fit for the butchers. Another point is, that during the early spring the farmer can devote time to the care of the newly-born lambs, as active farm work does not yet demand his attention. Good shelter and proper food for the dams must, of course, be provided. The barn should not be too warm, but must be dry and free from cold drafts. Frequent visits to the flock during the lambing period are very important. An occasional night visit may be the means of saving the life of some of the little creatures, as it is essential that the youngster obtain some nourishment from its dam during the first two or three hours of its existence—the most critical time of its life.

Good succulent food must be provided for the ewes, to furnish an abundance of milk. The lack of this often causes the mother to disown her young. Such may be induced to "adopt" her lamb by close, "solitary" confinement with the lamb at her side, and an occasional fright by bringing a dog near the place of confinement. But an "ounce of prevention is worth a pound of cure," and the prevention is to give proper feed. A small patch of rye will be the proper thing for mild weather, and turnips or mangels, supplemented with clover hay, oats and bran, and an abundance of pure water easily accessible, for all kinds of weather. Close attention, good judgment and kind treatment cannot be dispensed with.

HOW TO MAKE GILT-EDGED BUTTER.

L. S. HARDIN.

Whether a large or small amount of milk or butter is sold from the farm in a year, one is seldom satisfied with the price that is paid for it. The limit usually runs from ten to twenty-five cents a pound, while the creameries are getting from twenty-two to forty cents for the same article, only better made and furnished in large lots of a uniform quality. Here is a heavy loss to the farm. While it is true that good tools alone will not make fine butter or rich milk, yet they are indispensable to encourage the average maker to produce a better article. Tools are so cheap, too, that there ought to be a higher standard in the dairy output of the farm.

In the first place, old dairy implements that have been used for years, especially if they have any wood about them, become so thoroughly soaked with old butter grease that it is impossible to make a fine article with them. The instant cream or fresh butter comes in contact with them, they take all the life and fine flavor out of the fresh article. For instance, a piece of board, as is often seen, that has been used in the dairy for many seasons to cover the pans of milk, will deaden the cream as fast as it rises on the surface of the milk, so that good butter cannot be made from it. An old churn that smells strong from age will rob the butter of half its value. Milk as it comes from the cow is rich in high flavors, but of an exceeding perishable nature. To hold those flavors, everything with which it comes in contact must be as cool and clean and fresh as possible up to the time the bargain is struck with the merchant.

The first necessity is that the stables are clean, with no smell of rotting manure about them. Then use nicely scoured tin buckets to milk in. Hurry the milk out of the stable, or away from the cows, and set it immediately for creaming in cans or pans that are perfectly clean, and covered not with wood, but with sheets of scoured tin. The can that holds the cream must be scalded in hot water every time it is emptied, so that no particle of the old batch can get into the new. No churn should be used more than two seasons unless made of metal, or kept immaculately clean. In this respect the churn is the most dangerous of all the dairy utensils, and must be aired as much as possible up to the point of cracking it with too much drying out. Let the sun shine into it often. While no one should ever put the bare hands to butter, it must be manipulated. To do this, the best implements are two flat paddles, made of hard wood. The table on which the butter is worked is easily kept clean, and should also be made of hard wood. But the point of fatal error with many farmers' wives is that they will not pack and market the butter in the best shape to get good prices for it. The trouble usually comes from making the butter at odd times, and having no regular time for taking it to town, instead of first determining on what days of the month shipments can be made, and then regulate everything to that end. Butter should always be delivered within two weeks of the time the milk came from the cow; oftener if possible. Cream can be held from four to six days, depending on how cold it is kept and how sweet it was when taken from the milk. Never let it get too old, or all your hopes for good quality and high price will be crushed.

The farm output of butter will hardly be large enough to warrant using the ordinary butter tubs, and that is not the best shape to sell farm butter. By all means put it into one pound or two pound cakes, and press ridges across the top of each pat with the paddle. Now for a bit of enterprise, get some of the paraffin paper to wrap the prints in, or use cheesecloth. Do not use old cloths, even though thoroughly clean. What you buy for this purpose will not cost a quarter of a cent to the pound of butter, while it will add several cents to the market value of each pound. A little neatness in this regard sharpens the appetite of the buyer.

THE PROFITABLE DAIRY COW.

H. HAMILTON.

One very common mistake with dairymen is to reckon the value of a cow by her yearly yield of milk or butter. Perhaps, as a general rule, such a standard would more often be right than wrong, but at the same time it very often proves a false standard. At the Pennsylvania experiment station some very elaborate experiments were carried out, testing the profit of cows in milk and butter making. All the food was carefully weighed and charged. Marguerite produced 6,512 pounds of milk and 296 pounds of butter, while Ramona produced 5,459 pounds of milk and 279 pounds of butter. Ordinarily the dairyman would pronounce Marguerite the better cow of the two, but accounts had been kept with them, and it was found, at the end of the year, that Marguerite had made a profit of only $31.50, while Ramona returned a clear profit of $61.50.

All cows have what is called a normal appetite; that is, they will consume food up to a certain point, with a return in the pail of profit, but all fed beyond that amount is not only lost, but actually injures the cow. Every man who handles cows should test each one for at least a week during the fourth month from calving, and by using scales on the feed and a Babcock test on the milk, find out where the normal limit of each cow stands. Once testing will probably last the cow's lifetime. This individual testing is particularly valuable, owing to the remarkable variation in the appetites and assimilating powers of different cows.

The writer once owned two Jerseys. One was the largest cow, the largest eater, and the smallest milker; while the other was the smallest cow, the smallest eater, and the largest milker in the herd. Another cow was the fattest and among the smallest milkers, but so steady was her flow from end to end of the season that she averaged when the year's figures were summed up. One of the interesting features of dairying is finding out these queer creatures, to say nothing of the black sheep you find in the herd, and that are profitably parted with to the first butcher who fancies them.

Kicking Cows.—If the animal is handled kindly from calfhood, and the proper kind of person milks her—one who has sense enough to control his temper—there will be very little probability of the animal developing the kicking habit. If the cow's udder is sore, or if one handles tender teats too roughly, the cow is liable to kick. If she does, it will be wise to handle her more kindly and gently, lest she repeat the kicking so many times that it becomes a habit, for if it develops into a habit, nothing may serve to cure her. Young heifers, which have just dropped their calves, may kick occasionally at the beginning; and if the milker kicks her back, or strikes, or scolds her roughly, the chances are that the evil will be aggravated, and the cow ruined. Gentleness and kindness with dairy cows is the best plan to avoid having kicking cows. But there are frequent instances where the kicking propensity seems to be transmitted in the breeding from dam to offspring, and in such cases it will be a hard matter to effect a cure. As a rule, however, kicking cows are the result of ignorant and brutal treatment by those having them in charge, and entrusted with their training.

THE SWISS CATTLE.

B. DE WATTEVILLE, BERNE, SWITZERLAND.

The gigantic mountain ranges of Switzerland, which offer to the tourist a wide field of exciting climbing and unequaled scenery, are called by the somewhat inappropriate term of *alps*. Properly speaking, the word alps designates, in the Swiss idiom, the extensive pasture-grounds which cover the foothills of the snow-clad peaks, and which themselves attain considerable height. In contrast with the gigantic formations of the Alps, these foothills belong to the limestone formation, which affords an excellent substratum for a rich vegetation of succulent forage of highly nutritious qualities. On these pastures thousands of cattle graze during the summer months. Twice a day the cows answer the call of the herders and flock to the rustic "chalet" for salting and milking, when rivers of foaming milk are gathered and worked into appetizing cheeses, or churned to masses of yellow butter. From time immemorial the hardy mountaineer has driven his herds on the grassy slopes, and his rough and lonesome life has been sung by bards in numberless ballads. But, nowadays, poetry has been driven away by the exacting requirements of modern life; the bucolic shepherd belongs to the past, the herdsman of the day is bent on making money out of his pursuit; this means careful selection of stock and progressive methods of breeding. There are two principal breeds of cattle in Switzerland: The "brown-colored" stock, which is found in the southeastern section of the country, and the "spotted" cattle in the northwestern section. The characteristics of the former are: Short limbs, a short head with a broad forehead, a straight back and broad sides, shoulder muscles not much developed. The breeder's aim is to improve the cylindrical shape of the animal and to increase its production of milk. The color varies between uniform grey or brown, light brown being preferred to a darker shade. This kind of cattle belongs to the shorthorned stock (*Bos brachyceros*) which is a native of the Alpine regions, to judge from the bones of animals which have been unearthed in the vicinity of lacustrine dwellings. In various parts of Switzerland, this has been the only type of cattle known by the primitive inhabitants of the country.

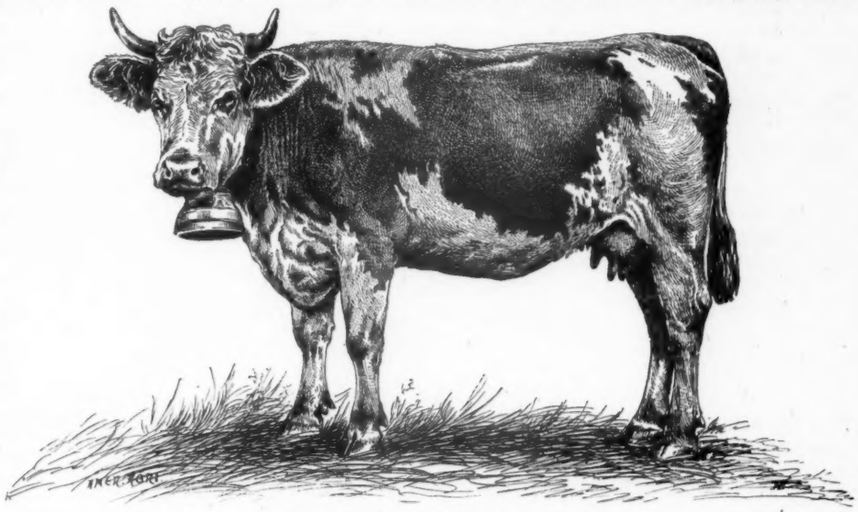


Fig. 1. TYPICAL SIMMENTHAL COW.

The ground color of the "spotted" cattle is white, with reddish or yellow, roe-colored spots in the Simmenthal, and with black, sharply-marked spots in Freiburg. Its build is much heavier than that of the brown cattle, and is further distinguished by a lofty carriage of the head, a strong neck, wide capacity of throat, breast, shoulders and ribs, a broad, straight back and rounded hindquarters. Its limbs are shapely, and pleasing to the eye; it has a good disposition, is easy to handle, and has a robust constitution. This spotted breed does not appear to have been indigenous to Switzerland, its skull does not match the skulls found among the lacustrian villages; its ancestor must have been the broad-skulled ox (*Bos frontosus*) of which remains have been discovered in the peat moors of Scandinavia and Great Britain. It is generally admitted that in prehistoric times, Scandinavians have, during the course of their wanderings southward, peopled some of the Alpine valleys, and that they have brought their cattle along with them. Even at the present day the resemblance of the features of the Bernese mountaineer in Switzerland with the Norwegian is said to be striking. Experiments in breeding together the black and the roe-colored cattle have proved a failure; while some improvement in shape and structure has occasionally been obtained, the mongrel color of the products of cross breeding has been so displeasing that further attempts have been abandoned. Black hairs in the ears or about the mouth on Simmenthal stock are put down by experts as a disqualification. The government has, for some years, encouraged the breeding of pure stock by the award of prizes on thoroughbred bulls, cows and calves; these prizes aggregate in the canton of Berne, alone, to about $16,000 every year. Bulls which have not been pronounced as being of pure blood are not allowed to be offered for public use for breeding purposes; they can be used for breeding by their owners only. On account of their powerful muscular development, straight back, strong limbs and brisk gait, the Simmenthal cattle are excellently fitted for work animals. They mature early; have splendid muscular development and rounded form, and their disposition to fatten easily is almost unequaled by any other breed. The fiber of the flesh is tender and the deposits of fat heavy at certain places. Of late years the Simmenthal cattle have been awarded first prizes in all the leading cattle shows in Germany and Hungary. Both countries are steady customers at the yearly fairs in the Simmenthal, and prices have steadily advanced. Whether these cattle would be adapted to the American climate I am not able to judge, but I cannot see why they should not, as they are hardy, healthy, strong and excellent for all purposes. Bulls attain a maximum weight of from twenty-five hundred to three thousand pounds; cows two thousand to twenty-two hundred pounds. The cows are good milkers; the milk-generating organs are well developed, the udder is large and soft, hairless and white. The milk veins are strong, easily felt by the hand; they reach as far as the thighs of the front legs. Compared with the Dutch stock they furnish nearly the same abundance of milk, while the milk is much richer. It has been noticed that while the milk of the Jersey is richer in fat than the Simmenthal, the Simmenthal yields over twice the quantity of milk given by the

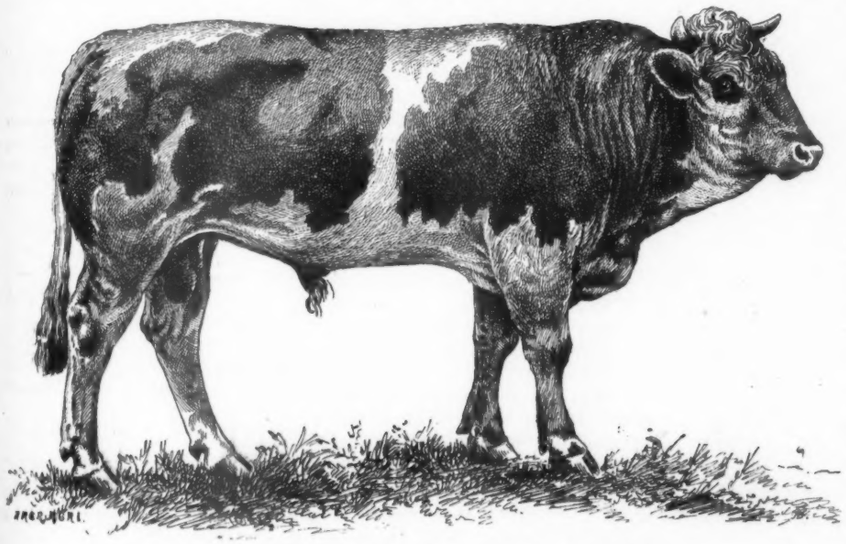


Fig. 2. PRIZE SWISS BULL RUEDI.

Jersey. Prof. Kirchner of Göttingen, Germany, has compared the production of milk of three cows, during the period of lactation, one Simmenthal, one Dutch and one Jersey, with the following result:

	Living Weight. Kilogr'm	*Quant'y of milk. Kilogr'm*	*Solid elements. Per cent.*	*Fat. Per cent.*	*Casein and Albumin*	*Sugar and Salts.*
Simmenthal	640	2920	12.68	3.73	3.47	5.48
Dutch	500	3096	11.21	3.04	2.88	5.29
Jersey	300	1404	15.84	5.99	3.78	6.07

With reference to the chemical composition of the milk as compared with other breeds of cattle, I am indebted for the following table to Dr. E. de Freudenreich, director of the State-laboratorium of Berne:

	Water. Per cent.	*Casein and Albumins. Per cent.*	*Fat. Per cent.*	*Sugar. Per cent.*	*Salts. Per cent.*
Ayrshire	86.93	3.42	3.58	5.43	0.64
Guernsey	85.39	3.98	5.11	4.38	1.14
Jersey	86.01	3.34	4.18	5.73	0.74
Durham, Shorthorn	87.20	3.31	3.45	5.45	0.69
Simmenthal	87.05	3.30	3.60	4.90	0.70

The average production of milk on a farm is shown by the following statistics, taken at Waldan, a farm connected with the State lunatic asylum. This is taken for a whole year, including the period when the Simmenthal cows are dry:

Number of Cows.	*Average Milk Production of Cow.*		*Maximum of Production of a Single Cow per Year.*
	Per day.	*Per year.*	
21	23.32 lbs.	8510 lbs.	13,302 lbs.
26	25.20 "	9198 "	12,584 "
30	21.82 "	7964 "	10,278 "
23	24.62 "	8986 "	10,642 "
23	20.30 "	7408 "	10,766 "

[The handsome Simmenthal bull shown in Fig. 1, on the preceding page, has recently been bought by the Hungarian government for the sum of $1,000. Fig. 2 represents a typical thoroughbred Simmenthal cow.]

ONE WATER TROUGH FOR SEVERAL FIELDS.

Good, pure water is one of the essentials of health, and a thriving condition in farm stock. Often a pump, wind-mill, or the overflow from springs or running streams can be utilized and the

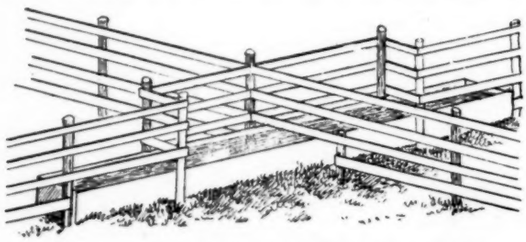


FIG. 1. WATERING TROUGH FOR FOUR FIELDS.

accumulation stored, or so distributed that stock from four fields may drink the water from the same trough. This will prove a great saving in the construction and maintenance of several troughs, and as stock from one field can be watered just as readily as those pasturing in four, the advantage is quite apparent. The manner of arranging the fences for a sixteen-foot trough is shown in Fig. 1, engraved from a sketch by L. D. Snook. If thought best one or two slats may extend across the trough where the fences cross it at the three points. In Fig. 2 is shown the plan of utilizing a caldron kettle for the same purpose. If these are used only

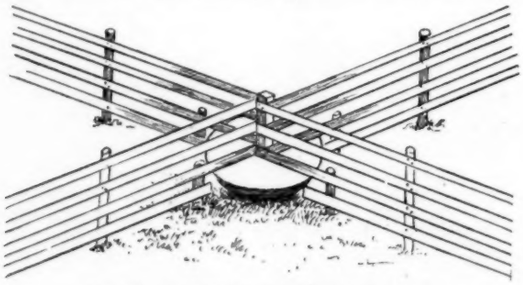


FIG. 2. CALDRON WATERING TROUGH.

during summer, they will be found very durable, and will last many generations. If ice is allowed to form in the kettle, there is danger of breaking it. If possible, drill a hole in the bottom for rapid cleaning, leaving this open when not in use. If a large circular cover is adjusted, but little rain will enter if exposed during the winter season. Both of these plans are equally available for use under barn basements where stock is usually wintered in several flocks, in fact the same trough is available for both localities, as it is readily placed in position. This will be found more practicable than watering stock from a pail, as many farmers have done for years. As to the manner of getting the water into the trough, many plans are feasible, adopting the one considered the most practical with the immediate surroundings.

A CONVENIENT VILLAGE STABLE.

A small window over the stable door, through which hay is pitched with difficulty, is avoided by a break in the roof, which is shown in the accompanying illustration (Fig. 1), giving room for

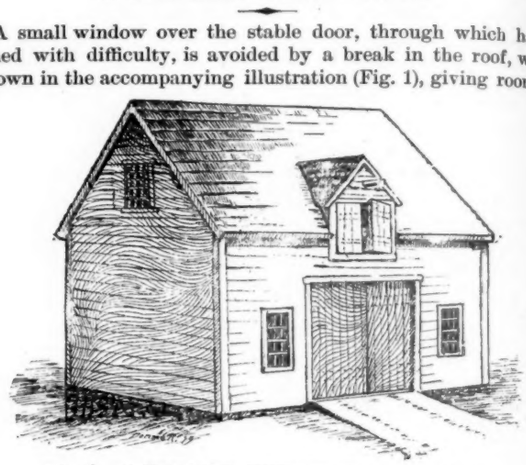


FIG. 1. PERSPECTIVE VIEW OF VILLAGE STABLE.

a door of generous size. A box stall ought to be provided in every stable, as it will be found most useful for the occasional use both of the horse and cow. It may take the place of the extra stall that ought always to be provided for the horse of a visitor, so that there is but little extra room called for. Where a cellar for the storing of litter can be provided, such an arrangement of stalls as is shown in Fig. 2, will be convenient. Where the bedding and manure must be thrown out of doors, which is unfortunate, a different arrangement of stalls may be found necessary.

OAK TANBARK—ITS PRODUCTION AND PREPARATION.

H. NICHOLAS JARCHOW.

Of all plants containing tannic acid, oaks are conceded to be the best for most tanning purposes. In the bark of oaks not older than from twelve to twenty years, according to soil and climate, the most effective tannic acid is produced. In Europe many groves of young oaks have been planted during the last fifty years, which have proved much more profitable than oaks cultivated for timber. Such a plantation is divided into as many sections as the years required for the seedlings to obtain the necessary development. As soon as the first section has reached the proper age, the young oaks are smoothly cut close above the crowns of the roots. The oak possessing in a high degree the capacity of emitting sprouts out of the stumps, there will be within the next period of growth very little after culture needed in order to harvest another crop of young oaks after the lapse of the years fixed by the rotation.

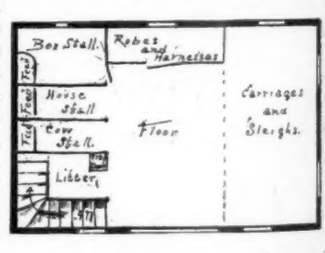


FIG. 2. FLOOR PLAN OF STABLE.

The best bark is produced in localities which are favorable to grape growing, well sheltered warm places with sandy but not poor soil. Sometimes the best and most profitable oak holts are on the sunny sides of mountain slopes. White oak (*Quercus alba*) is the most valuable, producing tanbark containing from eight to eleven per cent. of tannin; the red oak (*Quercus rubra*) also furnishes very good tanbark. On swamps and wet lands can be grown profitably *Quercus Prinus*, swamp chestnut oak, *Quercus bicolor*, swamp white oak, and *Quercus aquatica*, water oak. Planting acorns is preferable whenever good seed can be had. The acorns should be fully ripe, sound and well dried. Fall planting is most successful; but if there be danger that mice, rats and squirrels

during the winter might do harm to the acorns, planting should be postponed until spring, and the seeds, mixed with dry sand, should be kept in a cool place free from frost. Acorns from the white oak must be planted in the fall.

Commonly there will be required from three to four bushels of acorns per acre. The best plan is to divide the forest into as many lots as the years required for the full rotation of the tanbark plantation. Thinning and felling of matured trees are to be continued over the entire forest area, while the first lot devoted to future tanbark production is subjected to preparatory work. This consists mainly in cutting such oak trees as are not yet too old to produce vigorous sprouts, and planting vacant places with the saplings, which have been removed in thinning out. Trees which are too old for reproducing good sprouts from the stumps, and which have not yet attained such a development as to be used for timber, are left in their places. In the same way the work of conversion is performed when the next lot is to be taken in hand, and so on through all sections of the whole area. Each time a section is reached in the rotation for the cut, an improvement will be effected by removing old trees and useless stumps, and by planting oak seedlings instead. In the conversion of old forests into coppices for producing tanbark, a full return cannot be expected before the second rotation. Up to that time the revenue from the forest is confined to the income derived from the necessary felling of the larger trees, but as soon as the grove is cut for the third time, it will be found that this kind of forest is more profitable than the ordinary oak grove. The time for cutting young oaks for tanbark depends upon the ripeness of the bark when it contains the most and best tannic acid. While in some countries young oaks have ripe bark in the eleventh and twelfth year of their growth, in others twenty years may be required. On the best situations, with rich soil, young oaks produce bark of the desired quality much sooner than in colder localities with poor soil. Young oak groves have to be kept clean of overgrowing weeds and grasses; vacant places must be replanted, and often thinning is necessary. The stems of the young oaks must be kept free from twigs and sprouts. This operation, however, need not be performed before the trees are from nine to ten years old. The best time for peeling is the spring, the bark being then easily separated from the trunk. In well managed groves, where the stems are strongly developed and show vigorous bark, free from holes, the young trees are peeled as they stand. A cut is made through the whole length of the trunk (Fig. 1), and after cutting the bark completely around the base of the tree, it is fully loosened (Fig. 2), except at a small place (*c*), at the top of the trunk (*a*), by which it is kept attached to become dry (*b*). Drying the bark requires the same precautions as the proper peeling, because only such bark as is quickly and thoroughly dried will command the highest prices. For this purpose the coarser bark is spread over the felled and peeled trees and dried by frequent turning, while for the finer kinds wooden racks are made from the felled trees, upon which the bark is placed for drying. Thinning the forest for increasing the quantity and quality of the wood products is far too little known in the United States, and yet many old as well as young trees, which should be removed to make room for a more vigorous growth of the remaining trees, would furnish abundant material for tanbark.

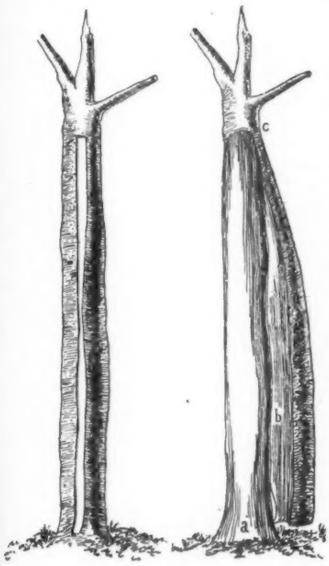


FIG. 1. TANBARK. FIG. 2.

Systematic Attention.—When repairs are left till the spring season is upon us, much that requires doing well is slighted, often left undone, because of the press of business. Farm work ought always to be done well, and nothing necessary to good farming should be left undone. Farming, as generally carried on, is not systematic enough. Systematic attention ought to extend to every detail of it.

A REMODELED LOG HOUSE.

D. COMINGS.

Among the wooded mountains and plains of the South, log cabins are still frequently seen. To the resident in other localities the term log house is suggestive of such primitive frontier life that little idea of comfort or civilization seems to be associated with such a domicile.

To those who have been guests in many such homes the name brings to mind not only the average comforts of country life, but

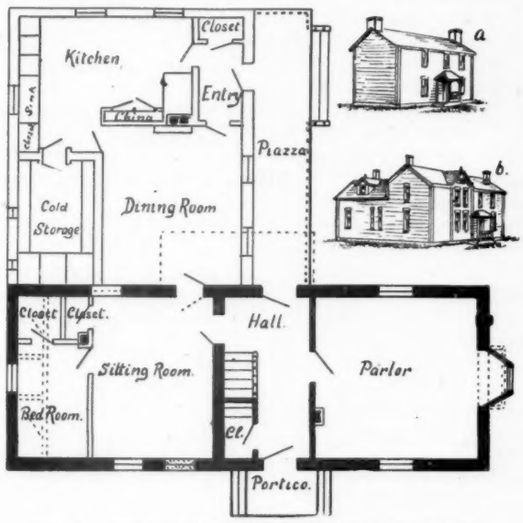


FIG. 1. FIRST FLOOR OF REMODELED LOG HOUSE.

ofttimes some that are not experienced in the house built after the more frail construction of modern days. When weather-boarded outside and well finished within, the appearance is such as would entirely deceive the uninitiated, who would be impressed only by the solid, substantial construction everywhere manifested. Those who have lived for years in such a home, dislike to exchange the time-tried shelter for an entirely new abode, while convenience, as well as economy, demands a compromise by enlarging and remodeling the old house to adapt it to the present needs and style.

The accompanying illustrations show how such log houses may be remodeled. In the plans the walls which are solid black are the

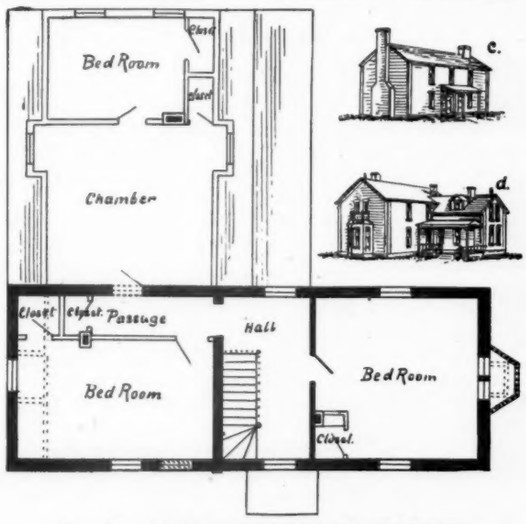


FIG. 2. SECOND-FLOOR PLAN OF NEW HOUSE.

old walls which remain unchanged in the reconstruction; the dotted lines show where partitions, windows or chimneys have been removed, and the outlined walls indicate the new parts of the buildings. Two views of the old house are given at *a* and *c* (Fig. 1 and Fig. 2), with two corresponding views of the remodeled dwelling, which are presented in *b* and *d*. This is a very simply constructed two-story house with the unusual proportions of 16x42 feet; *a* gives the western frontage, which is still farther drawn out in length by an outside chimney at the south end, shown in *c*. Front and rear

porches afford entrances to the broad hall, which separates the two large rooms on either floor; at the end of the sitting room and the chamber above is an immense inside chimney with a clothespress on each side. Every room is lighted by a front and rear window.

The log partition between the sitting room and hall seems to indicate that the house has been at one time smaller than the plans given. To begin the repairs necessary to bring it to the domestic requirements, a story and a half ell is first erected, running back twenty-four feet from the sitting room, with a width of twenty-two feet, and a piazza along the south side (*d*) five feet wide; the old back porch being removed, this piazza affords an entrance to the main hall, as well as to the entry of the new part.

The first floor of the addition (Fig. 1) contains a pleasant dining room opening out of the sitting room through the former porch door. Beyond the dining room is the entry with a closet and the kitchen with a stone hearth for the range, and a china cupboard in one corner; the sink, set tubs and a low closet or cupboard are ranged along the opposite side. On the north side, log partitions and double doors enclose a cold storage room, with shelves and bins around the sides.

On the second floor (Fig. 2) the old back window is cut down to form a doorway into a large open chamber with a closet, and beyond is a bedroom also having a closet. The new ell being finished, it will accommodate the family while the old part is being renovated. A new chimney flue is built between the parlor and hall, and the old outside chimney torn away to give place to a sunny bay window below and a mullion window above. The rear window in the sitting room, being now enclosed, is walled up. The old stone chimney and presses are removed, leaving very large rooms on both floors at this end of the house; north windows are put into each room in place of the chimney, a small bedroom is partitioned off the sitting room and a chimney built in the angle of the partitions, and a second front window put in to light the sitting room. Two closets and a passageway are cut off from the bedroom on the floor above. The door between this passageway and the hall may be removed and a portiere take its place. The parlor below would be pleasanter if the door was replaced by folding doors or a portiere.

The outside appearance is already much improved, but still the front is too long and bare in outline; this can be somewhat relieved by putting in a second story front window over the new one in the sitting room and putting a gable on the roof over these windows, with false post boards running down each side to break the monotony of the clapboards, thus forming a bay or panel of this section of the front. These changes will modernize the old home in appearance and provide conveniences for domestic comfort and hospitality such as every farmer's wife desires.

WHITE FIELD BEANS AS A FARM CROP.

WILLIAM J. THOMAS, MICHIGAN.

There is no crop that will yield a greater profit at so little expense than field beans, and there is no crop for which there is a more constant or better demand. Sheep and cattle eat the vines fully as well, and do better, pound for pound, than on hay. There are few crops from which the returns come so quickly, ninety days from the time of planting to the sale of the crop being no uncommon thing. There is no crop that can be kept over the winter with greater safety. Rats and mice do not trouble them, and the shrinkage is slight. There are few crops that exhaust the soil so little, as may readily be seen from the rank growth of the crop following them, wheat or rye producing nearly or equal to summer fallowing. There are few crops raised in which the ground is left so clean, being a cultivated crop, and the vines not growing tall enough to hide the weeds in the hills, the few that cannot be cultivated out are easily pulled.

White beans will grow on almost all kinds of soil, but good wheat land is preferable. Beans may be grown on very light land, that perhaps would grow nothing else save rye or buckwheat, still the yield would be small. They appreciate good soil and care as well as any crop. Land that will average twenty bushels of wheat per acre can be depended on for the same amount of beans. Some townships in Michigan are largely devoted to bean culture, the quantity of beans raised being double that of any other crop. Some idea of the magnitude of the crop can be obtained from the fact that there are eight steam bean threshers within a radius of a few miles around the little village where I reside, and all are kept employed several months every fall.

In preparing the soil it is best to plow the ground as early in the spring as practicable, to get it in good condition for planting. Many of the weeds are killed in the harrowing, and the soil holds the moisture better for the early plowing. Fall plowing would not be any advantage on clay soil, on account of the extra work to loosen the soil in the spring. Barnyard manure is the only kind of fertilizer used in this section, and this is better when applied to the previous crop. Whether commercial fertilizers could be used at a profit or not in growing the crop, I have never seen tested. The time for planting white beans is from the middle of May to the middle of June. Those planted as soon as the danger from frost is over usually mature before severe drouth sets in. Those planted the latter part of June do not generally set until the drouth is broken, and mature in September. A good crop of beans is sometimes secured when they are planted the first of July. As a rule, in latitude 43° North the last of May is about the best time to plant, for then the danger from frost is over. Planted at this time they mature about the last of August, before there is any danger of the crop being injured either by frost or fall rains. It also gives plenty of time to prepare the ground for winter wheat or rye.

Twenty years ago bean culture was all done by hand. Now it is all changed, and by the use of a bean planter, which is drawn by two horses, one man can plant from ten to eighteen acres a day. The machine plants from three to ten beans in a hill. A man can gage the machine all the way from a peck to a bushel per acre. The machine plants from one foot to five feet apart in the row, as desired. The rows can be planted thirty, thirty-two or thirty-four inches apart. The beans are dropped in a perfect hill. Every hill is visible before it is covered, and it can be seen at once whether the machine is dropping correctly or not. If the ground is properly fitted, every hill is covered to a uniform depth, which is of great importance, as a difference of two or three days in coming up may make a week's difference in ripening, and it is very desirable that the crop shall ripen evenly. The beans come up through a ridge which admits of their being cultivated as soon as they are out of the ground, as the rows show plainly.

Beans being very rapid growers, the raiser does well to cultivate them three times. The first time I cultivate twice in a row, after that once. Where the ground is rough and hilly, the Planet Jr. one-horse cultivator is used. On level or nearly level ground a two-horse wheel cultivator is used. With the latter the driver rides, and about twice as much can be done as with the one-horse walking cultivator. Beans should not be cultivated immediately after a heavy rain, and some do not cultivate while the dew is on, but I do not pay much attention to this. It will not do, however, to cultivate them when the ground becomes very dry, especially if the plants are in blossom. It is a much mooted question whether cultivation is advisable or not after they are in blossom, but I have done so with profit. I always set the cultivator to run to the edge of the leaves, which does not disturb the vines or roots very much. The crop planted in drills admits of cultivation only one way. During the growing season the crop has no insect enemy unless it be the cutworm, and the crop comes on so late and grows so rapidly, that it is soon out of the reach of the worm. A long drouth is the thing most to be dreaded in the culture of field beans.

SHORT FURROWS.

MARION RAMBO.

The short road to wealth is seldom safe to travel.

A "gold brick" deal always has a rascal on both sides.

Not every man has the strength to lift a farm mortgage.

Reciprocate the milk of kine with the milk of human kindness.

A cement floor in your poultry house will prove a good investment.

Some farmers are hard run because their wives have forgotten how to patch.

Some church people enjoy no meeting so poorly as meeting the payment of a debt.

Oh, for some kind of felt boot to put on men's hearts to keep them from freezing!

He that works always with his hands, and never with his brain, will ever be a poor man.

The greatest misfortune that ever befalls some men is the receipt of a government pension.

A look into the swill pail will often reveal the reason why some mortgages are foreclosed.

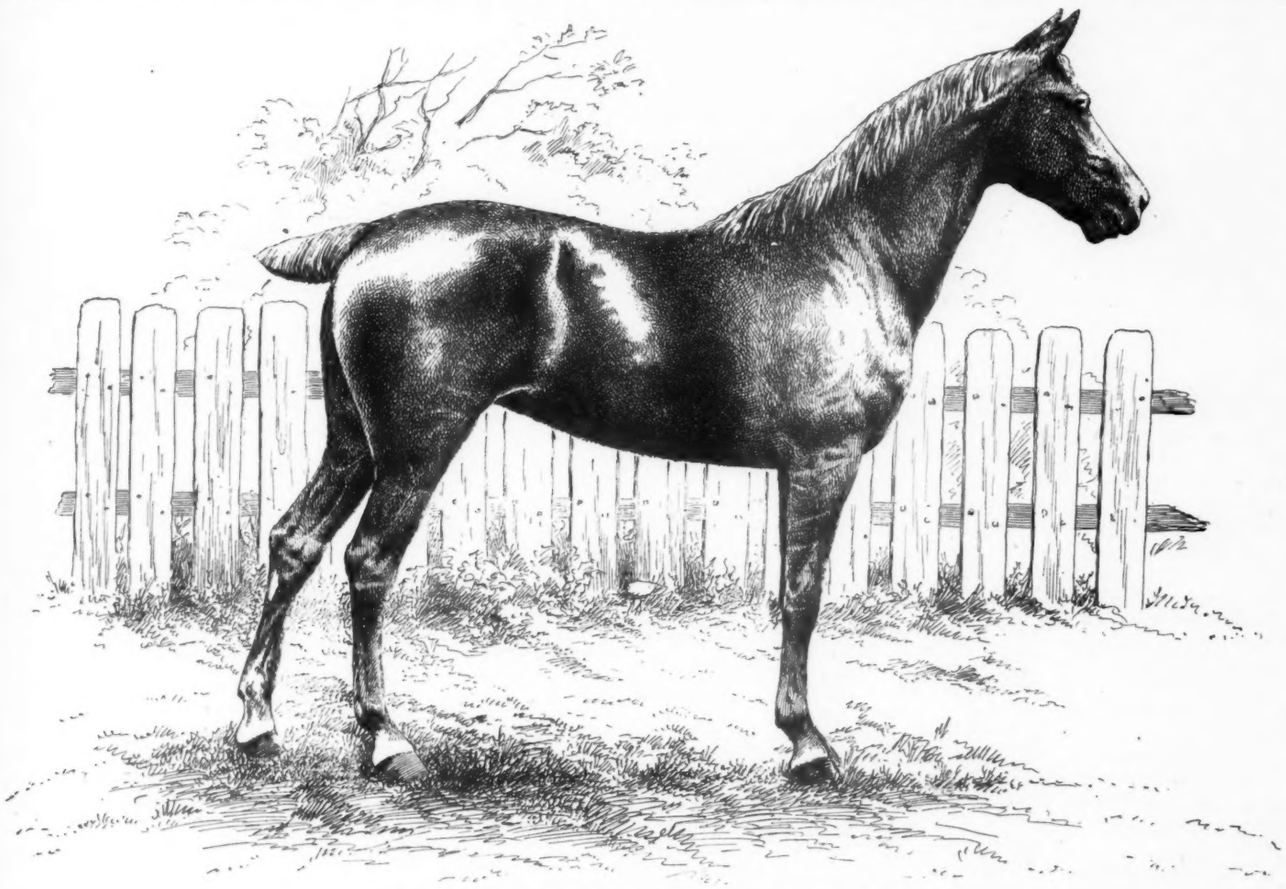
The man who never speaks gently to his horses is the same man who never speaks kindly to his wife, or to his children.

MONEY IN HARNESS HORSES.

E. T. RIDDICK.

Some journals devoted to the interest of breeding horses have, for the last year or two, contained numerous articles on the small profit to be derived by farmers from raising horses. They hold that the electric roads, cable roads, and more recently the application of electricity to carriages and trucks, will soon do away with the ordinary horse, and that the farmer must look to other means of increasing his income than in raising a colt or two every year. As far as the ordinary horse is concerned—that is, the one used by city street car companies—there is no doubt that to a certain extent this is correct, but there has never been at any time as much money in raising a first-class harness horse as there is to-day.

The subject of the illustration, Alantha, by Matchless of Londesboro, 18 (1517), out of a mare by Harold Mambrino, is one of the best types of the horse that is to-day in demand in the great city markets where the people live who are not only willing but able to pay large prices for their horse flesh. Alantha is rising four years old, and last year as a three-year-old won the first prize at the Philadelphia horse show, and the first prize in a class of thirty high steppers at the Madison Square Garden horse show, New York. Her dam, bred on good lines with the blood of Harold and Pilot, Jr., has remarkable quality; and such mares are owned by thousands of farmers in the United States. She is a little under-sized, but the sire of Alantha is 15.3, with unusually good bone, magnificent barrel, fine shoulders, long, rangy neck, on which is set a remarkably fine-featured head. The quarters are level on top and spring with a beautiful curve to hocks well let down, and the impression that the observer gets is "There's a horse for all day." It is wronging the American farmer to say, as so many have said, that the breeding of such horses not only costs money, but requires a special adaptability to feed and train them for the market. This is beyond all question a mistaken notion, as the hackney or harness horse of England has been bred for centuries by the farmers of England, who like a horse that can go twelve and more miles an hour all day long, and at the same time present a very showy appearance. The hackney is a horse that owes all his present perfection to the English farmer, and while he is of coarser and larger bone than is desired in America, where the eye has been educated to the breedy appearance of our trotters and thoroughbreds, there is no doubt that with a cross upon our standard bred mares he gives the ideal harness horse. Such horses bring in the large city markets from $1,000 to $3,000 a pair. Mr. Henry Fairfax, of Oak Hill Stud, Aldie, Loudoun Co., Va., the breeder of Alantha has recently sold four of just such animals for $1,000 apiece. It is useless to ask the question, Does this pay? Any farmer can see that having the use of a horse for a couple of years and then fitting it for the city markets, he has little more expense than he would have to raise a good steer; and look at the difference in the price per pound of each animal. Horses must be used on the farm, no matter to what extent the improvement in machinery develops. It is absolutely necessary to have a horse for hauling, plowing, and harvesting. The farmer can just as well have mares as geldings, and every year they can bring him a foal. This foal, by careful feeding—I mean by this oats, bran and good grades of hay, and stabled in the winter—at two years old will develop into a horse that is able to do a fair amount of work, such as harrowing and light hauling, and for road purposes, and at four years old will be thoroughly developed and let down, and, properly mannered, or trained, will bring a big price. Farmers may think that they have no facilities for selling such horses. While this may be true, to a certain extent, there is no doubt about it that after a while when it becomes known that a farmer has such animals for sale, the buyers for the large city stables will soon look him up. There is no better way to increase the value of land in a community than by purchasing a pure-bred hackney stallion of good conformation. This horse can be owned by a company just as well as by any one individual, and each shareholder can secure his services for a nominal fee.



ALANTHA, THE FAMOUS PRIZE WINNER.

The question that naturally arises is, What kind of mares should be selected for breeding good harness horses? They should have substance, plenty of bone, with fair action. The mare should be sixteen hands high, with long neck, carrying a good head, with fine ears. The ears should always be in proportion, and, of all things, the mare should have an intelligent head. Take care in selecting an animal, that she has not loaded shoulders. They must

be sloping, well laid into her back. The legs should be straight with a bold knee, flat and strong, and an expressed angle from the fetlock joint to the point of the toe of the foot. The withers should be bold and well pronounced. The girth should be deep with flat ribs, and the false ribs should go well up to the lumbar space. The spine should curve a little at the croup, but not drop down. Goose-rumped horses, as those with dropped croups are called, do not sell well. The rump or buttock should be round, and the thigh should go well down to the hock joint. The hock must be flat, the point behind smooth and round, and the legs should be slightly bent or bowed. This one point should be remembered, the hind legs must never be straight, neither should they be sickel shaped, cow hocked, or out of proportion. The feet should not be flat, but in good proportion, and what any farmer would call a good, sound foot. With such mares, and the service of the stallion, as mentioned above, there would be no trouble in having a community become known as the home of fine harness animals, and while the unfinished horses would not bring as much as the finished or well-made animal, the farmer could easily count upon four to five hundred dollars for each animal sold.

There is no doubt that this requires some special knowledge on the part of the farmer, and the best way to secure this knowledge is by taking a trip to some city market where he will see the horses ready for the buyer, made, bitted, mannered and fit to go at once into harness. City people have no time for breaking and training, and want a horse that can at once be hitched up ready to do his work. Another point which I especially wish to make is that "out of nothing, nothing comes." A farmer cannot expect to have a fine horse unless he feeds him. The dam should be fed; the colt should be fed. They should have warm quarters and be well taken care of. A daily grooming makes a great difference in the health and prosperity of any colt. Let the farmer try it once, and he will never after neglect to "dress his horse every morning."

THE LIVER FLUKE OF SHEEP.

HENRY STEWART.

The most destructive disease of sheep is that known as the liver rot, or the fluke. It has at times almost ruined the English sheep farmers, several millions of sheep and lambs being carried off by the pest in a single year, and the supplies of the largest market in the world, that of Smithfield in London, having been reduced to the extent of five thousand head daily for the whole year. It has more than decimated the flocks of Australia, and no country seems to be free from its hateful presence. Egypt, with its hot climate and its water-soaked fields, suffers more than any other part of the world, and wherever swamps or wet soil are found, there this pest flourishes, and the flocks decay.

It is called liver rot because this organ is the seat of the disease, and after the death of the animal it is soft and rotten, being easily crumbled by the fingers. Every part of the animal is yellow, by reason of the presence of the bile in the blood, and the gall bladder is found filled with the worms or flukes, while they are numerously encysted in the substance of the liver. The life history of the fluke gives us the whole story of the nature and course of the disease in the flock.

The liver fluke belongs to the class of Entozoa, and to the division of it known as Trematoda or perforated worms. It has been called a fluke from its flat shape; its scientific name is *Distoma hepatica*. There are a great many species, and each one has its special host, mankind being included in the list of its victims. It is found in the ox, the deer, dog, fox, rabbit, goat, elk, reindeer, zebu, antelope, and in the shepherd himself; but the sheep is the most infested of all animals. It is at first a parasite of a snail, an amphibious species known as *Limnœa truncatula*, which inhabits a small, twisted shell half an inch long, or lives free in the water in the immature form of a tailed, round body, much like a tadpole. The infested mollusk leaves the water at times, and attaches itself to the stems of grass, in which condition it is taken into the sheep's stomach, or it is swallowed in the water in which it wriggles on the banks of streams or ponds, or in the puddles in marshes. It is rarely found in high, dry ground, and it is mostly the sheep that pasture in low lands, or drink from slow-moving or dead water, that are subject to the disease. But they are never found in salt or brackish water; hence those flocks, like the Romney Marsh of the seaside meadows of England, are not troubled by them. And thus, too, salt freely given has been found a preventive to some degree. The worm having gained access to the sheep, or the eggs of it being swallowed, finds its way to the gall ducts of the liver, and there encysts itself, and attains maturity, producing eggs which, dropped on the grass by the sheep, get in some way into the water and begin the natural course of life once more.

The infested sheep at first begin to get fat—possibly by the stimulated action of the liver—but the fat is yellow from the excess of bile in the blood. Soon, however, the animal shows a noticeable dullness, and the visible membranes become pale, except the white of the eye, which appears yellow like that of a jaundiced person. In warm and damp weather the stricken sheep may die rapidly and suddenly without warning, from a fever and poisoning of the blood. Otherwise they shrink, swell under the throat, become drawn about the nose, and have that woebegone appearance so well known to the experienced shepherd. The wool loosens and drops off, or is easily torn from the skin, and hangs in loose patches. Then it hides itself, as death approaches, and is found swollen and decomposed, or it lingers miserably and staggers about; has a stinking diarrhea; a fetid discharge runs from the nostrils; the eyes are red; and death ends the creature's misery. Examination shows the liver to be so degenerated as to drop apart at a touch, the flesh is pale, the abdomen is filled with yellow serum, the heart is soft and pale, and the whole internal organs are diseased.

Fortunately there is a remedy and measurable prevention of this disease. To give salt, with one-tenth part of sulphate of iron mixed with it, in doses of a teaspoonful daily, and to drain the pastures or fence of the stagnant ponds or muddy streams, and supply the animals with pure well water, will save the flock. But if the disease has appeared, or from the nature of the range, prevention cannot be afforded, the following treatment will act as a continuous remedy and destroy the parasites before they have become fixed in their final resting places. Take saltpeter six ounces, ginger ground four ounces, carbonate of iron two ounces, and salt three and one-half pounds. Powder the ingredients, and dissolve them in three gallons of water. Then add for each quart three ounces of turpentine. The liquid is bottled and is thoroughly shaken into an emulsion before it is used. The infested sheep are kept fasting for twelve hours, and then each one is given two ounces of the preparation. No food is given for three hours after. This is done three times in four-day intervals. By that time the turpentine will have been fully absorbed into the system, and the tonic have stimulated the liver, so as to destroy the immature parasites. It is useful to keep this medicine on hand, with a measure for giving it, and where there is danger this will avert it. As with all other parasites, the constant use of the right remedies will in time remove them from their haunts and exterminate them.

SPRING PIGS.

The prevailing high price of pork will induce farmers to promote the rapid development of all their swine. Spring pigs, particularly, will receive extra care and attention. One of the requisites is a warm pen, and it will pay to make it as cozy as possible. Give the pigs plenty of bedding, separating this from the remainder of the pen by a board six inches wide set upon edge. Give plenty of milk for the first four weeks, mixing in a little corn meal or chop stuff, after which more solid food may be given. If obliged to feed corn or other grain whole, it should be soaked six hours in warm water previous to feeding. Do not turn the pigs out to pasture until the grass is at least six inches high, and if the object be to produce fat they should be kept under shelter until the desired size be reached. When at large they spend a great deal of time and do not gain very fast in weight when rooting or racing about. Do not allow any other swine but the mother and pigs in the same pen, feed her liberally, and when a disposition is shown to wean them take away all the pigs but one, removing that one in a week thereafter.

AVOIDABLE EXPENSES.

It costs money to neglect repairing the fences while the ground is soft.

It costs money to have a poor fence around pastures, for the cattle to break through.

It costs money to allow the manure to lie under the eaves, and fertilize the roadside or nearest stream.

It costs money, in the extra feed required, to keep cattle and horses together loose in the same yard.

It costs money to let the cows become poor during the winter, and take all summer to recover condition.

It costs money to let the manure lay in piles all winter, when labor is cheap and work scarce, and draw it out in spring, when labor is high and work abundant.

SKUNK FARMING.

W. Z. HUTCHINSON, MICHIGAN.

About a mile from Buchanan, Mich., on the high banks of a good-sized stream, are three or four acres fenced in with a high board fence that extends four feet into the earth and is surmounted by several strands of barbed wire. This is the skunk farm of the Michigan Fur Co., which has invested several thousand dollars in this enterprise. It is a great mistake that this fence was not built at the outset, as while the skunks were being kept in pens—as they were before the fence was built — the rats gained such a foothold that it has since been found impossible to dislodge them, and it costs nearly as much to feed them as it does to maintain the skunks. At a recent visit I found an old man and a white bulldog in charge. The dog had been raised inside the enclosure, not having been outside even once since he was a puppy. Having been brought up with the skunks, and taught not to molest them, he passes them by unheeded, but a rat or chipmunk, or a darkey who tried to steal skunks in the night, is considered legitimate game. It was a lonesome life that the old man led, and I found him more than willing to talk. From him I learned that the animals for stocking the farm were obtained from men and boys who had made it a business to catch them. As high as three dollars apiece was paid at first, but later the price was reduced somewhat. To capture them they are followed or tracked to their holes, and then dug out. Sometimes several animals are found in one hole. When digging them out the work is continued until they are nearly reached, then the open side of a box is placed close up to the mouth of the hole, and another excavation is made from above, down behind the animals, and, as the digger approaches them, they crowd back into the box. A board is then slipped down in front of them, thus forming a cover to the box in which they may be safely carried away. At first, as already mentioned, the animals were kept confined in pens and boxes, but they did not thrive; especially was this the case with the young, and at last it was decided to build a fence and allow them the run of a few acres. The surface of the ground was clay, and in this the skunks could not, or would not, dig their holes; so a post-hole auger was used to bore through the clay, when it was found that the skunks were willing to finish their burrows if some one would only dig through the clay for them. In one place the sidehill was fairly honey-combed with their holes. Near the foot of the hill was a good-sized spring that had been dammed up, thus forming a miniature pond from which the animals could get the drink that they must have. A hydraulic ram, still farther down the hill, forced water up to a tank near the cook-house where the food was prepared.

KEEPER, WATCH-DOG, COOK-HOUSE AND CELLAR.

SKUNKS AT SUPPER.

This plan has entirely removed the ill effects of confinement, but with it came other difficulties similar to keeping poultry in large numbers; it must be divided into small flocks, each flock having its own home. It seemed to be something the same way with skunks when three hundred and eighty were gathered together, as was once the case at this farm. Large numbers would gather in a single hole, where they would fight until some of them were killed. Sometimes some of them would be smothered. Besides this, the packing together of such large numbers seemed to heat the fur, or otherwise cause it to curl, lessening its market value. Another objection to allowing them their liberty to this extent is the difficulty of catching any particular animal when it is desirable. Efforts are being made towards improvement by selection in breeding. Most of the animals have two white stripes upon the back. This white greatly lessens the value of a skin. Occasionally an animal is found that has only a white spot upon the top of the head. When slaughtering time arrives it is very desirable that those with the most white be among the first killed, while those with the least white be saved for breeders. The killing is done by confining the animals in a tight box and pouring in chloroform. The decision now is that each female and her young, which are born in May, and number from two to a dozen, usually about six or seven, shall have a pen about sixteen feet square, with a tiny house filled with straw for a nest. Part of the floor will be of boards, and the remainder left uncovered, as it seems necessary that the animals have access to the ground in order that they may keep themselves free from lice. Several males will be kept together in a similar pen. This is for summer management. In winter the animals will be kept several together in smaller pens in cellars dug for the purpose, as both the skunks and their food must be protected from the freezing weather of winter. At present an outdoor cellar is used to keep the food in during the winter. The food is varied to some extent. The

THE HOME OF MANY SKUNKS.

The natural food of the skunk is insects, worms, lizards, frogs, and fowls and their eggs if they can be obtained. The food furnished them in captivity is corn meal, or wheat middlings mixed with chopped meat and boiled into a sort of pudding. The offal from slaughter houses and the waste of butcher shops is largely used; or, if some animal is killed by accident or so injured that it must be killed, the carcass is secured and worked up into food for the skunks. There is a small house in which a brick arch surrounds an immense caldron, and at the time of my visit the kettle was in use cooking up the meat from a fine young horse that had broken its neck the day before. About four o'clock in the afternoon the food is placed upon small boards scattered about the yard, and soon after an occasional animal may be seen eating its supper. Later they may be seen in twos and threes, but it is not until dark that they venture forth in any considerable numbers. I was fortunate enough to find three in a group before it was too dark to use the camera. I could not get quite so near them as I wished, not that I was afraid of them, but that they did not like the looks of me and my machine. A skunk is not always on the lookout to "pepper" some one, as is so generally believed; when approached it will run away if it can. It is only when driven into a corner and brought to bay that it uses its terrible weapon.

The greater profit of the business, however, does not come from the fur, but from the oil. Over the back of a skunk, just beneath the skin, is a coat of pure fat, or blubber, that sometimes approaches an inch in thickness. From a large, fat skunk a quart of oil is sometimes obtained. This oil has a peculiarly penetrating and softening power, and there is a ready demand in the drug trade for the oil, seventy-five cents a pint sometimes being paid for it at wholesale. The Michigan Fur Company has also in view the raising of silver grey foxes, the fur of which sells at fabulous prices. This variety of foxes is probably extinct in this part of the country, or nearly so, but the company hopes to obtain some from Alaska. A few years ago, so the manager told me, a female silver-grey fox was caught in the vicinity of Buchanan, and kept in captivity. She gave birth to a litter of young soon after she was caught. They all became quite tame, and their owner congratulated himself upon his good fortune until one day a dog was allowed to approach too near, when, in a twinkling, the mother fox caught each little one by the back, and, with one quick snap and jerk, broke its back. Evidently she reasoned that if they must die it would be better if she did the killing rather than have them fall into the jaws of the enemy to be worried to death. [Various features of this skunk farm are seen in our engraving on the preceding page.]

VINE CROPS IN DRILLS.

ALBERT LEE.

After several years of experience I am well pleased with the method of planting melons, squashes and cucumbers in drills. With me this plan proves superior to the old hill system, both in the saving of labor and in larger returns. In preparing the land I plow deep, spread on a liberal supply of manure and work it well into the soil. These members of the gourd and cucumber family are rapid growers and need an abundance of available plant food wherever their long roots may extend. When ready for planting I mark out the rows six or eight feet apart, having them as long as possible, usually not less than twenty-five rods in length. The furrows are opened with a large plow, which is run twice in each furrow, going as deep as possible both ways. Along this furrow I scatter fine manure until it is about two-thirds full, after which I turn in enough soil to make a level surface. This last work is done with the riding cultivator and an attachment for covering potatoes. Then a plank clod crusher is run over the ground, pressing the soil into the furrows and smoothing the surface, after which a smoothing harrow finishes up the work of preparing the soil.

Again the marker is used, running in the same place as at first, or as nearly as possible over the centers of the filled furrows. Into these marks the seeds are dropped quite thickly so as to have plenty of plants, counting on various losses through poor seed, insects, unfavorable weather and other possible causes. When the plants are well up, and before beginning to crowd, the weaker ones are pulled up. A week or two later the final thinning is done. The aim should be to leave a strong plant for every fifteen to eighteen inches of row. Between each pair of vine rows I generally plant a row of early peas, or some other early crop that will be out of the way early in the season. The melons do not need all the space during the first week, but will need all of it before the close of the season. The cultivation is all done with a sulky cultivator until the running vines get in the way. As soon as the catch-crops have been harvested, the rubbish is removed and the space they have occupied is torn up with a one-horse cultivator. This implement is then used until the space becomes too narrow. A little hand work may be needed to train the main branches of the vines so they shall run at right angles with the rows, as the cultivator is apt to turn them aside, and produce a tangled ridge parallel with the rows. With a very little work at just the right time, the vines may be straightened out so that the future growth will cover the ground entirely and evenly. Last year I had an average of three hundred and fifty salable muskmelons per row of twenty-five rods in length, and the early watermelons yielded over four hundred per row. Wherever there is ready sale for these crops at a fair price, the profit is very satisfactory.

IN THE SHRUBBERY.

E. P. POWELL, NEW YORK.

One of the best of our recent acquisitions to the shrubbery is *Rhododendron Vaseyi*. It proves entirely hardy. The flower corolla is of a clear pink and appears on the plants when they are very young.

Magnolia glauca can be grown and flowered as far north as Central New York, if it has a light winter protection. I put over it a barrel stuffed with leaves. The flower appears half way between *M. conspicua* and *M. C. Soulangeana*. Its richness of perfume places it ahead of any other variety.

It is a surprise to me that so few people grow our superb native evergreen shrub the mahonia *Berberis Aquifolium*. It is green all winter and desirable at any time for cutting. The flowers appear in May in great golden balls. These cover the whole plant, which, if well grown, will reach a diameter of ten feet. As soon as the flowers fall, the new growth begins as rich red tips to all the branches. The mahonia should be protected from winter's sun; otherwise it is entirely hardy. Planted in the northeast angle of a house it is sure to thrive. On an open lawn, cover it winters with a few evergreen boughs, or with leaves.

My boys discovered, recently, several new double and single flowering thorns, which have been transplanted, and are being cared for with much anxiety. They are doubtless accidental crosses.

Those who have not yet grown the *Exochorda grandiflora* will find it a most charming shrub. It is entirely covered in May with saucer-shaped, pure white flowers, opening four parted. The buds are a special beauty, hanging like silver balls. The plant is not easily propagated, but is quite hardy. It grows to be about ten or twelve feet high.

The spreading or dwarf horse chestnut is one of our most handsome shrubs for a good sized lawn. It will spread over a diameter of twenty feet, and never stand more than four feet high. The flowers appear in August, and are of a miniature horse chestnut style. The fruit is about as large as a small sweet chestnut.

The white and the pink flowering sorts of the Japan quince are fully as good as the scarlet. The fruit of these plants is good for a jelly, and better yet to place in drawers for the sake of its rich perfume. The fragrance will endure for many months, while the quinces dry up but do not decay.

The new *Prunus Simoni* is valuable in a shrubbery for its upright growth. The fruit is as ornamental as the bush, but rarely ripens perfectly. The *Prunus Pissardi* is also valuable for fruit as well as foliage. It does not bear abundantly until old, and never profusely, for lack of self-pollenizing.

A rare but exceedingly choice lawn ornament is the Russian maple. It is a small shrub-like tree which is always pretty, and in autumn is a solid mass of fire.

Planting Strawberries.—In the majority of cases, the spring of the year is the best season for planting strawberries. When the plants are received from the nursery, they should be unpacked at once and spread out in a cellar, to prevent heating, and in planting the roots should not be exposed to sun or air. The ground should be free from weeds, and well fertilized. The rows may be thirty inches apart, plants one foot apart in the row. They need to be frequently cultivated to keep down all weeds, which are the strawberry grower's greatest enemy. In the autumn, after the ground has become firmly frozen, the plants should be covered with leaves, clean straw, or corn fodder. Stable manure should not be used on these beds, because full of seeds. Strawberry beds should be renewed every two or three years if the best fruit is desired.

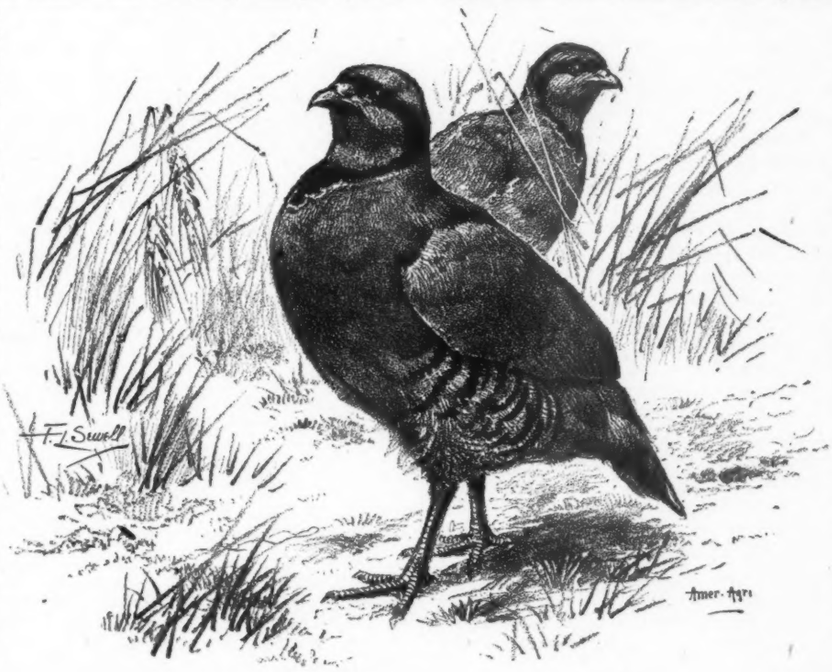
CHUKOR PARTRIDGES.

F. L. SEWELL.

The introduction of the Indian Chukor partridge, *Caccabis chukor*, promises to become a valuable acquisition to America. Some fine birds of this species have recently been imported by Dr. W. O. Blaisdell of Illinois, who has introduced several other valuable varieties of partridge and pheasant. His method is to rear a large number of the foreign birds and then turn them free in the woodlands of his country place, just as the pheasants in England have been acclimated and put out on large tracts of preserved lands to increase and multiply of their own accord.

The Chukor or Chickore partridge inhabits the high plains and tablelands of India, and even to the snow line of the Himalaya mountains, so it is reasonable to expect that they may take well to the American climate. The imported birds, eight in number, are doing well, one of the females having laid forty-six eggs. It is to be hoped that the parties in whose care the birds have been placed will have such success with them that in a few years the country in that vicinity may possess a good stock of them.

The size of the bird is about twice that of the common quail. The accompanying illustration gives a fair idea of their form and the arrangement of their colors. The following description, from Dr. Murray's book on birds, will give an idea of how attractive the birds are in color: *Caccabis chukor*, Chukor partridge, above pale bluish, and olive ashy with a rufescent tinge on the back; sides of face, chin and throat fulvous, pale chestnut or rufescent circled by a broad, black band from the forehead through the eye, along the side of the cheek on to the breast, meeting its fellow from the other side and forming a large, pale chestnut, or rufescent pectoral gorget; a pale white line behind the eye; ear coverts, chestnut; sides and lower mandible and chin with a black spot; breast bluish ashy, slightly tinged with rufescent; abdomen and under tail coverts buff; flanks from the axil are deeper buff; each feather ashy at the base, with two dark bands, the inter-space, which is buff, and is terminated broadly with chestnut; wings concolorous with the back; the ends of all the primaries except the first marginal, to nearly the tip on their outer webs with buff; some of the secondaries also; axillaries buff; tail rufescent except the central feathers, which are concolorous with the back — length fourteen to sixteen inches. Expanse twenty-one to twenty-five; wing six to seven; tail four to five. The female slightly smaller. The Chukor partridge is found throughout the Himalayas to Afghanistan. It is common in Persia and along the Arabian coast. It breeds from May to July, making its nests of short grass under the shelter of grass tufts or bushes. It lays from twelve to sixteen eggs, and in other ways is very much like the common quail. [The accompanying engraving portrays a pair of these beautiful Chukor partridges.]



A PAIR OF CHUKOR PARTRIDGES.

How to Keep the Chicks Growing.—When the chicks are a week old, turn the old hen with her brood into the meadow, after ten o'clock, every fine day. The dew will be off the grass, and the chicks will hustle for anything in the shape of worms or bugs. The exercise is what they want and need—an hour's romp is long enough. They should then be driven into the brooding coop and fed moderately. The chickens already hatched should be kept growing, in order that they may be large and strong enough to withstand the excessive heat of the summer days. They also should be kept growing for another reason, and that is to save the grain. A chicken which simply holds its own is one that is wasting all the grain fed to it. It is making no return whatever for what it eats. And then, too, a chicken which is kept growing, and has no periods of standing still, will generally make a larger and finer fowl than one which grows intermittently. Continuous growth is profitable growth.

SECURE YARDS FOR SPRING CHICKENS.

NANNIE CABELL, VIRGINIA.

After trying various kinds of fencing for a yard that will keep in the chicks and keep out everything else, I have settled on poultry netting as combining all the desirable qualities, with few drawbacks. My yard, in which I had as many as three hundred and thirty-seven chickens of various ages at one time, was sixty feet long by fifteen feet wide. It is best to have a foot wide plank at the bottom all around, as small-sized chicks can get through two-inch poultry netting. Last winter I had no divisions in my yard, so to prevent little chickens from being crowded out and run over by big chicks, I had to resort to various devices—small netting runs in front of coops, and some other things. Last winter I had this big yard subdivided into ten yards by fences of cheesecloth tacked to a wide plank at the bottom and to a two-inch wide strip at the top, with a gate made of the cheesecloth tacked on a frame in each division, so that I can easily pass from one to the other. This dividing of broods does away with all necessity of wire-covered runs in front of coops to keep the big chickens from trampling the others, and when chicks get large and the mother hen is taken from them, will prevent overcrowding and consequent smothering. Each small yard is six feet wide by fifteen feet long, which is a very good-sized run for from thirty to forty chicks. Wherever there are chickens there are hawks, and when they catch even one fowl a day they diminish the profits considerably, as the early chickens net me over fifty cents each; so, to prevent their ravages, I had poles about nine feet high from the surface of the ground planted all along through the middle of the yard lengthwise, and strips nailed from one pole to another at the top. Over this ridge I threw twine, which I tied to the top of the netting fence on each side, the twine being about six inches apart, thus forming a kind of netting of twine, shaped like the roof of a house. Of course this did not obstruct the sunshine, but it kept off all hawks. I saw one make two attempts one evening, darting down to catch a chicken, but it struck the twine each time, and I was not again troubled. For a permanent yard one might use light wire. My yard is on the sunny side of a hill, which is all right in dry weather, but when it is wet it is very slippery; so I shall lay a plank walk to my yard, and also a walk in front of each coop, extending the whole length of the yard, being made in short lengths to fit each small yard. The gates of course must be opposite each other, so that one can step from one walk to another. These walks not only prevent one from slipping, but keep the feet dry while walking.

Pure and Cool Water for Poultry.—Stone drinking fountains are the best for watering fowls having no access to a running stream. If placed in a shady place in the house, the water will keep cool longer in a stone vessel than in one of tin. Fresh clean water is as important for the health of a flock of fowls as wholesome food.

A HOMEMADE DRILL FOR FARM WELLS.

R. W. BATTLES, PENNSYLVANIA.

Many localities are so situated as to make well-digging an expensive and uncertain necessity. In some places water is not found without digging from one hundred to one hundred and fifty feet for it. It is a prevalent idea that a well thus deep cannot be put down without employing some one who makes a business of drilling wells with appropriate and expensive machinery; and possibly after going to this depth, water may not be obtained.

My experience in drilling some deep wells on my own farm may aid some farmer to put down a well that will cost him only a few dollars in cash. The necessary tools can be made, at little expense, by any village blacksmith. The tools, when properly made, will

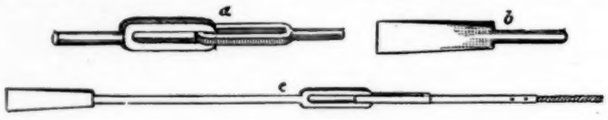


FIG. 1. JARS AND BIT FOR WELL DRILL.

drill a well five hundred feet deep if needed. First, two pieces of one and one-fourth inch gaspipe are needed; one ten feet long, the other five feet. Take these to the blacksmith and have him make a pair of jars (*a* Fig. 1) similar to the jars used for oil-well tools. These jars should have a shank a foot long that will fit inside the one and one-fourth inch pipe. Now either weld these jars into the two pieces of pipe, or securely rivet them, welding being far preferable. Have the loop of one jar left open, so as to connect them like links in a chain. Loop them together, and weld the open end of the jar. Now have the blacksmith make a steel bit, the shank also one foot long, and the end of the bit or drill two and one-half inches wide (*b* Fig. 1). Weld this bit into the end of the ten-foot pipe, and drill two holes in the end of the five-foot piece, to rivet in the rope. Now get as long a piece of inch rope as will probably be needed and rivet it into the end of the five-foot pipe (*c* Fig. 1). After putting the rivets through the rope, drive some soft wood wedges between the rope and pipe, and the rope will never pull out.

Build a derrick fifteen feet high, or the limb of a tree will answer the same purpose. If no trees are convenient, put up three poles and hang a pulley at the top. Put the rope on the pulley, and the derrick is ready. The first fifteen feet of drilling will be the slowest. One can weld a two-inch augur on an iron rod, and bore the fifteen feet in clay very well. If in gravel, this first part must be spudded until the drill can be attached to the spring pole. This pole should be twenty or twenty-five feet long, with the butt end firmly fastened to the ground (Fig. 2). About eight feet from this end put a block so that the small end will be about four feet from the ground. Now put a swivel on the small end, with a link large enough for a loop of the rope to pass through. I put a handle on the swivel of the tools I made, for they have to be continuously turned to insure a round hole.

A sand pump must be made. A three-foot two-inch wired tin pipe will make this. Have the tinsmith solder some ears on the inside of one end, and put a heavy wire bale on it. For the valve, use a round piece of wood the size of the pipe, and bore an inch hole through it; saw it off about four inches long and nail a

FIG. 2. SPRING POLE FOR WELL DRILLING.

round piece of leather or rubber on one end, so that it will act as a pump valve. Put this in the end of the sand pump, leather end inside, fastening it with some brads through the tin, and the sand pump is finished. As the tools are churned up and down with the spring pole, add a little water occasionally. After drilling a foot, pull out the tools and use the sand pump.

In clay, a man can drill thirty or forty feet in a day, but only ten to fifteen feet in rock. The jars allow the driller to loosen his tools should they become wedged in the hole, which they frequently do. Anyone who has seen a gas or oil well drilled will at once understand the directions, as the tools are the same, only on a small scale. When water is found, a pipe two inches in diameter, or even smaller, can be put down and the pump attached. Should you fail to find water, you will at least have the satisfaction that the hole cost you but a few dollars. The spring pole may be run through the side of the barn or any building, and the rafters will make the necessary derrick.

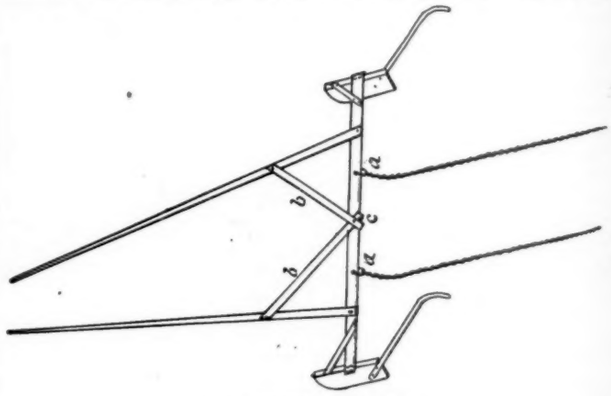
Should quicksand be encountered, as frequently happens, slip down some two-inch pipe, narrow up the drill, and if the jars are made narrow, the quicksand can be cased off, and the drilling proceed through the pipe. One of my neighbors had a seventy-five foot well drilled last fall that cost him one dollar per foot, which is a reasonable price. I drilled a well nearly as deep with tools like those described, that did not cost over five dollars in cash. A natural gas well was drilled one hundred feet deep in this way with a spring pole by one of my neighbors. I do not intend to say that this is the best way to put down gas or water wells, but simply that it can be done, and cheaply done, by those who have the time.

HOW TO MARK CORN GROUND.

CHARLES E. BENTON, MASS.

I have often wondered how it is possible for a sober man to make corn rows as crooked as some I have seen when traveling through the country. Nor is the injury in appearance alone. The cultivator cannot run as close to the young plants and do as good work in crooked rows as it can in straight ones, so that the labor wasted in keeping the crop clean is ten times as much as would be required to mark the rows straight in the first place. One cause of so many crooked rows is to be found in the fact that so few farmers know how to make a really good drag with which to mark the ground, and no one can do the best work with poor tools.

In the accompanying sketch is shown a corn drag which I have used for the last twenty-five years, with great satisfaction and suc-



A GOOD CORN MARKER.

cess. It can be made in a few hours by any farmer, and the material used is not expensive. For the stringer I use two by four spruce. Suppose the rows are to be three and a half feet apart, then the stringer should be cut ten feet and eight inches in length. This will make the runners ten feet and six inches apart, measured from center to center. The runners are two feet long, made of two-inch plank ten inches wide, and to each of them is bolted a plow handle. They are notched to receive the stringer which is nailed to them, and braced, and also by short braces on the under side which the sketch does not show. The space between the runners is equally divided by two iron hooks, *a a*, to each of which is attached an ox chain. The shafts are twelve feet long, and are simply saplings of some stout wood left with the bark on to give them toughness. They are each fastened to the stringer by one bolt, and supported by braces, *b b*, which are fastened to each shaft by a bolt, and the two cross on the stringer at *c*, where they are fastened by one bolt passing through them. The ends of the shafts have holes in them by means of which they are fastened, on each side of the horse, with straps to the hame rings. It will be seen that the runners give it height sufficient to pass over stones or uneven ground. As the two center marks are made by the heavy chains the planter will find no missing marks, as happens when all the marks are made by runners. In that case the slight elevations and depressions of the surface of the field would cause one or two of the runners to be off the ground half the time.

To do good work everything depends upon having one perfectly straight mark to begin with. To accomplish this I set a row of stakes along one side of the field, perfectly in line, and then I walk down the line and back, dragging a chain behind me. Now I place one runner of the dray on this mark, and walking directly behind

this runner keep it exactly on the mark the whole distance. Having crossed the field and turned around I stop and straighten the chains back in line with the work. The workman will now take his place behind the other runner, which will be run in the last mark, thus ensuring perfectly even distance between the rows. The drag may be quickly changed to a more compact form by removing the bolt *c*, which will release that end of the two shaft braces. The shafts may then be swung around against the stringer, and folded in that compact form the marker is easy to transport to and from the field, or to store overhead in some outbuilding.

THE VALUE OF SURFACE DRAINS.

FRED. GRUNDY, ILLINOIS.

Immediately after the heavy spring rains many a farmer will see where he ought to have opened ditches last fall. He will also note the utter uselessness of the little single furrow ditches opened

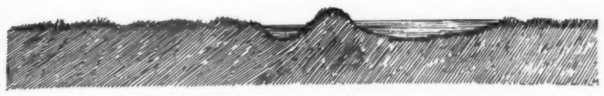


FIG. 1. FAULTY SURFACE DRAIN.

by the plow. The ridge of earth thrown up on one side prevents the water from entering the furrow (Fig. 1). It is not only a miserably poor drain on level land, but it is also a ridge and a gully, which shatters machinery passing over it. The sensible farmer makes his shallow drains in the form shown in Fig. 2. A machine to do this is shown in Fig. 3. This is only a simple, homemade implement, but its value for opening shallow drains can hardly be overestimated.

This drain plow or ditcher is made of two oak planks twelve inches wide, the farther side, as shown in the sketch, runs straight with the pole, while this side sets at an angle with it. The point is shod with iron, and the top is covered with boards firmly nailed on. There is a brace across the center, under the boards, to stiffen the sides and make the implement stronger. The dotted line shows

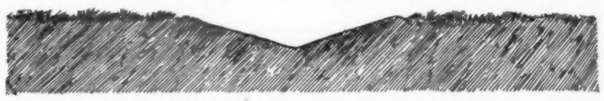


FIG. 2. PROPERLY MADE SURFACE DRAIN.

where it is placed. The driver stands on the boards, and by changing his position can change the character of the drain he is making. By standing near the front he forces the nose of the ditcher down into the soil and makes a narrow drain. When following a furrow opened by a plow he stands near the farther or straight side and holds it down to the bottom of the furrow, doing the same as he returns. This makes a drain like that shown in Fig. 2, and a harrow follows after, leveling the ridges raised. A skillful operator will soon learn where to throw his weight to make any sort of a drain desired.

The spring rains are not over when oats are sown, and it is advisable to open drains for possible floods that may drown out

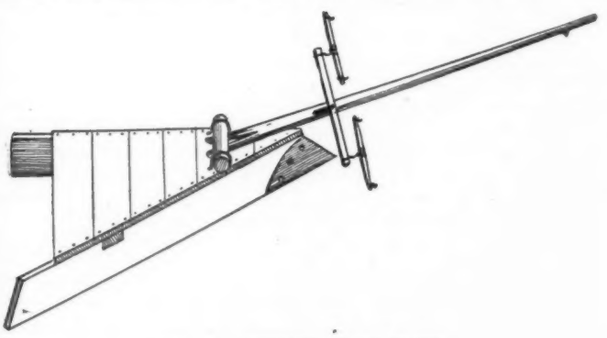


FIG. 3. SURFACE DRAIN PLOW.

much of the crop. If they are opened with this implement there is no danger of shattering harvesting machinery in crossing them. If the soil is likely to wash badly along such drains they should be opened wide, and not less than a foot deep, and heavily sown with grass seed, and then not plowed any more. It is far better to have a strip of grass extending across a cultivated field than to have an impassable gully. If the land is sown to permanent meadow or pasture these drains should be made at the time of such sowing. No variety of grass is benefited by having water cover it for a week.

Just before a field is planted to corn, it is a good idea to open these shallow drains along all the low places. I have seen the soil in prime condition and the weather all that could be desired until the corn was planted, and then a flood came and acres of the corn rotted just for the lack of a few shallow, open ditches to carry off the water quickly. It pays to be prepared at all times for floods. Where the water has a chance to flow off freely the soil is fit to work a week to ten days sooner than where it is compelled to slowly flow over level ground. In fact, a shallow, open ditch is sometimes the difference between a good crop and none at all. In an experience extending over twenty-five years, I have not seen more than three or four seasons when the opening of surface drains was labor lost. But I have many a time seen acres and acres of wheat, oats and corn flooded and drowned out just for the lack of a few such drains. It pays to open them every time a crop is planted, whether it be winter wheat, grass or corn. And with the implement shown in the sketch, and a smoothing harrow, it can be done quickly.

To make a good, permanent drain, plow two furrows four feet apart, throwing the soil outward. Follow with the ditcher, running the nose or prow along the bottom of the furrows. Continue to plow and scrape until the center is reached. Then if any part of the drain needs to be deeper, plow as before, only nearer the center of the drain, and scrape out with the ditcher. Run along the outer edge of the ridges thrown up with both plow and ditcher, and con-

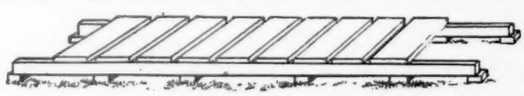


FIG. 1. SECTION OF BOARD WALK.

tinue until the edges of the ditch are reached. This will move all the loose soil farther away from the ditch, and also level it down more. Finish leveling with a smoothing board or plank clod crusher. Two men with teams, can quickly open a wide, shallow drain that will remain a drain for years, unless filled by plowing.

TWO SERVICEABLE WALKS.

G. MORRISON.

In many sections of the country the construction of good and serviceable walks about the house and yard is a serious matter, as neither gravel nor rock is to be had at any reasonable cost, none being found either in the hills or water courses. The material most largely used is pine boards nailed to oak scantling. Such

FIG. 2. CROSS SECTION OF WALK MADE OF COAL ASHES.

walks will last from five to twenty-five years. This wide difference in the lasting qualities of a board and scantling walk is sufficient proof that there is a right and a wrong way of building. If the scantling be carelessly laid on the ground, as is often done, and the boards nailed close together, the walk will not remain serviceable for more than five years. That is the wrong way.

The right way to construct a plank walk is to lay the scantling edgewise on bricks laid flat on the ground, three to four feet apart, as shown in Fig. 1. Nail the boards half an inch apart, and give them a good dressing of warm linseed oil. If the oil is thickened a little with drab-colored white lead, all the better. The bricks will keep the scantling off the ground, and, being shaded from the sun by the boards, they will last a long time. It is important that the space of half an inch be left between the boards, else the action of rain and frost will cause them to pry each other off. The coating of thickened oil will penetrate the wood, closing the pores and aiding greatly in keeping out water. If this application is repeated about once every five years, it will increase the lasting qualities of the walk, and assist greatly in preserving the wood from decay. I know of walks laid and treated as above described that are good after twenty-five years of service.

Another kind of walk used to some extent in stoneless regions is made of coal ashes. The ashes are sifted by being thrown through a plasterer's sand sieve, and the clinkers and coarse particles used for the foundation, and the finer for finishing off the surface. Fig. 2 shows how a cross section of such a walk is constructed. It

was made sixteen years ago, and is in good order yet, and likely to last a generation or two longer. An excavation eight feet wide and five inches deep was made and the soil carted away. As the land was naturally somewhat low and wet, and inclined to heave in winter, a three-inch tile drain, having a good outlet, was laid along the center of the excavation, twelve inches deeper, and covered with coarse ashes instead of soil, as shown in the sketch. This insured quick and perfect drainage. Six-inch boards were set up edgewise along the borders of the excavation and the ashes thrown in, first a four-inch layer of clinkers and coarse stuff, then a cover of about two inches of fine ashes, mixed with about one-tenth of their bulk of dry cement. It was then rolled smooth and wet down with a sprinkler. Frost raised the board edging out, and it was removed the second year. As will be seen, the walk was made slightly rounded on the surface, and it has retained that form until the present time. It is smooth, clean, and neither weeds nor grass have made any inroads upon it, while the lawnmower can be run so as to clip off everything that grows along its borders.

CELERY GROWING IN THE COTTON STATES.

DR. J. S. NEWMAN, GEORGIA.

An erroneous impression prevails as to the practicability and profit of growing celery in the Southern States. Among my early and pleasant recollections in connection with the home garden in Virginia, was the delicious celery served throughout the winter. I well remember that celery invariably followed English peas as a second crop. The plants were grown in the tobacco bed, of which they were the exclusive occupants after the tobacco plants were drawn for transplanting. As I remember, no difficulty was experienced in securing plants from the tobacco bed, because the latter was prepared by burning a moist plot of virgin soil. The seeds grown with the tobacco seed were simply pressed into the soil, without being covered with any implement.

So common has been the impression that plants can not be grown in the South that celery is rarely seen in a Southern garden. Indeed very few avail themselves of our superior climatic conditions, and have winter gardens. From the latitude of Atlanta south the garden should be a source of daily supply of vegetables, which should include a bed of choice celery. For the last two winters my garden has furnished a continuous supply of celery, such as would put that shipped from Kalamazoo to the blush. Indeed all who ate it admitted that they had never before tasted any so crisp and delicately flavored.

For an early spring crop the seed may be sown in the fall and transplanted in February. The plant is perfectly hardy in this latitude. Indeed it resisted a temperature of two degrees below zero without protection in January, 1893. Where the seed plants stood last summer there are thousands of volunteer plants ready for transplanting. Seed for the fall and winter crop may be sown at intervals from February to May, in moist and partly shaded situations. Pulverize the surface thoroughly, sow the seed in drills, and either cover by sifting fine dark mold over them, or, better, pass a heavy roller over the seed rows without covering. Neither moist land nor irrigation is necessary for success in celery culture in the South. Any fertile soil well supplied with humus will grow good celery. Moist land and irrigation are desirable, but not necessary. The cultivators of dry, sandy soils in the cotton States plant their corn in the "water-furrow" to increase its drouth and heat-resisting power. A similar practice renders celery culture upon uplands, without irrigation, practicable and profitable.

In garden culture, trench a spade's depth and mix well-rotted manure and a complete commercial fertilizer, applied at the rate of a thousand pounds per acre, with the soil and subsoil in the bottom of the trench without filling it. Do this two weeks before setting the plants. Draw the plants carefully from the seedbed, with as much soil adhering to the fibrous roots as possible, cut off the large leaves just above the end of the bud leaf, and transplant into the trenches, placing the plants six inches apart in the drill, if in single row. If the soil is very strong, plant two rows in each trench, placing the plants in one row, opposite the spaces between those in the other; the rows four to six inches apart. This reduces the cost of blanching. If the plants become crowded in the seedbed, thin them, and either plant in permanent rows or transplant to other beds, giving each plant four square inches of surface. This will cause a stocky growth and increase the root surface, very much improving the plants for the final transplanting into the fields. The transplanting for the winter crop may be done from June to August whenever there is a suitable season, or by watering in the plants if the soil is dry. If the weather is very dry and warm after transplanting, a light covering of leafy branches, laid across the trenches, will afford temporary protection, and will gradually admit the sun by the shrinking of the leaves of the bush until the plants are sufficiently established to dispense with protection. In transplanting and cultivating, care must be exercised to prevent covering the bed with soil. The cultivation consists in keeping the surface of the soil between the rows (which should be five feet apart) and around the plants thoroughly pulverized, until the weather becomes sufficiently cool to commence handling preparatory to earthing up for blanching.

A crop of bunch beans may be grown between the rows of celery—one row in the center—which will repay the cost of cultivation. Preparatory to handling, loosen the soil between the rows, in order that it may be readily drawn against the plants by hand, the first step in earthing up. The stems are straightened up and held in that position by pressing the soil against them on all sides. The subsequent work of earthing up is done with the plow, and should be done at intervals until the entire plant is covered before severe freezing weather. The most desirable varieties of celery for the South are Half-Dwarf for fall and early winter use, and the Giant Pascal for late winter and early spring.

THE RECORD OF A "MADAM CROZY" CANNA.

G. A. WOOLSON, VERMONT.

Quoth an ancient dame: "None of your new-fangled colors for me; give me good, old-fashioned red and yellow." A desire fully gratified by Madam Crozy—the new French canna of recent introduction to the floral world. For the man, also, who seeks his "money's worth" in brilliancy of color and constancy of bloom, this canna is a wondrous boon. As an out-of-door plant it is fairly successful, if given rich soil, plenty of water, and partial shade; but so brittle is the texture of the blossom that high winds are oftentimes disastrous; for this reason it is as a conservatory or window plant that Madam Crozy does her best work.

Last fall a spring purchase, grown through the summer in a nine-inch pot, was brought indoors and placed in a sunny bay window. The top soil was removed, lumps of cow manure placed in the pot, and rich earth piled over it. Liquid fertilizer of some sort was given once a week; occasionally wood ashes were sprinkled over the soil. Old stalks which bloomed out of doors were cut down to make room for the rising generation. New ones immediately pushed up, and well-sheathed buds appeared with the sixth leaf. November 6th, flowers opened on the larger of the two clusters, and on the other a few days later; the first sent out lateral branches, which enabled this particular stalk to furnish flowers for two months—a record truly remarkable. The entire strength of the plant seemed concentrated in the marvelous blaze of color, for the leaves began to look weary in a month's time. Before the last flower dropped other sprouts were crowding; this time the fourth leaf heralded the advent of another crown of glory, which gave its first blossom February 14th. The theory of progression and substitution is well illustrated by this remarkable plant.

One point which adds to the value of this canna is the genuineness of its color; for not half of the so-called scarlet flowers really are such. Florists appear to have a standard of colors peculiarly their own; they sometimes allow us a "crimson-scarlet," a solution—if the floral apothecary will permit the term—which may mean most anything from deep rose-pink to cardinal, but which is not apropos for a Madam Crozy canna, which is essentially a brilliant scarlet flower with yellow edge and markings on the lower petal. Indeed, so fiery is the shade of red that a wise man never wears one in his buttonhole, and will not use the same for a "head-light" on his bicycle on days when the hose companies are on drill.

Currants and Gooseberries. — These valuable fruits are grown with great ease, and need only to be kept free from weeds. New plants are readily obtained by making cuttings in the autumn, six inches long, which may be planted at once, or kept in the cellar in moist sand, and planted in the spring. The plants need renewing every six or eight years. Better fruit is grown on young, than on old bushes. To secure large crops, the bushes have to be pretty severely pruned each year. The rust or mildew of the gooseberry is now quite completely controlled by spraying the bushes with a solution of potassium sulphide, one ounce to two gallons of water.

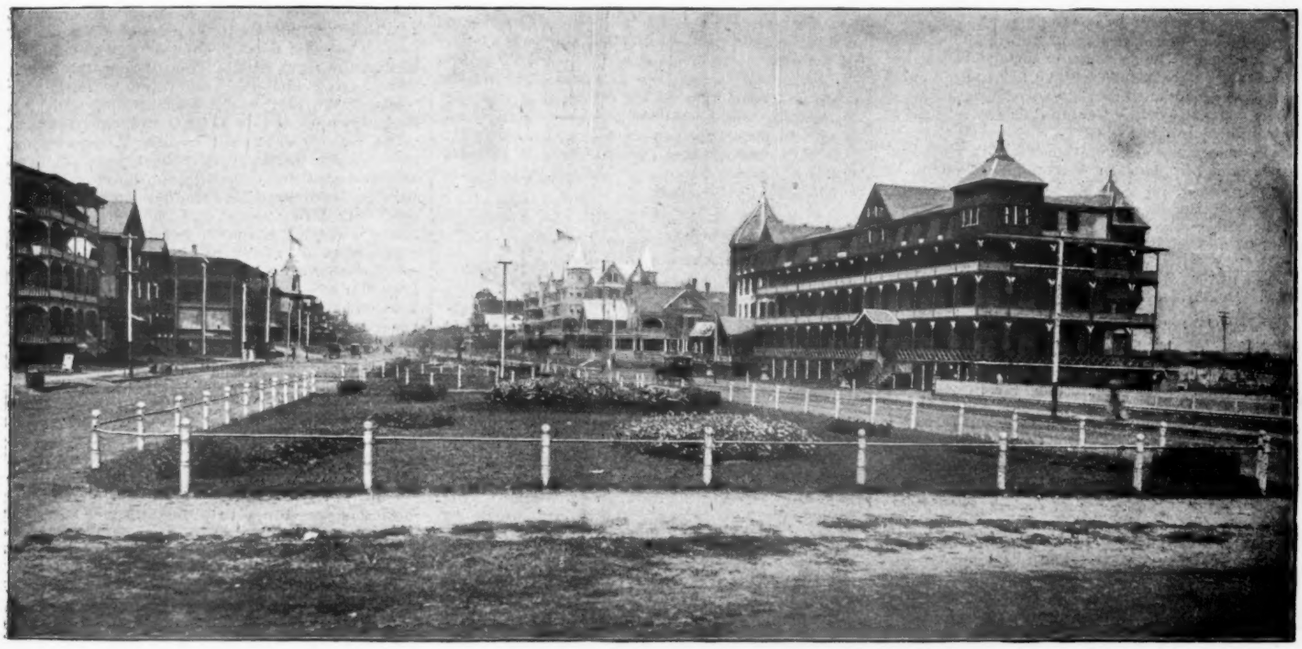
BEAUTIFYING PUBLIC THOROUGHFARES.

GEO. R. KNAPP, NEW JERSEY.

The tendency of the age is toward a higher standard of refinement, and nowhere is this shown in a greater degree than in the use of trees, shrubs and plants for decoration of public and private grounds. Time was when well-kept and artistically arranged grounds about private residences,—in the small towns especially,—were the exceptions rather than the rule, as now. Unfortunately it is difficult, in some localities, to obtain a satisfactory growth of trees or plants, except at the cost of much time, labor and money. Such conditions exist along the New Jersey coast, covering all of the popular summer resorts, Long Branch, Elberon, Asbury Park, Spring Lake, Point Pleasant, Manasquan and others. In all these places the land is very sandy, and little but crab grass will grow on it. This sand often extends for a mile or more back from the ocean, so that it may be readily observed that in order to obtain satisfactory results in shrub or plant decoration it involves "making the soil" for a considerable depth, to say nothing of the care required after planting. Yet notwithstanding these difficulties, few places can boast of better or more extensive plant ornamentation than the Jersey coast resorts.

Two years ago Asbury Park took the first steps in the ornamentation of its public thoroughfares. Running westward from the ocean the town has seven or eight thoroughfares, approximately one hundred feet wide, but widest at the ends nearest the ocean. At these wide approaches a space in the center of the thoroughfare has been graded up, filled in and seeded down. Along the edges privet hedges, or low garden edgings of metal, or low gas pipe fences have been erected. At the proper intervals on their so-called mounds, spaces of different shape have been broken and planted with summer flowering and foliage plants, as cannas, coleus, geraniums, Caladium esculentum, ageratum, and pyrethrum. At the proper angles, design beds in carpet form are laid out, using mainly varieties of alternanthera. The cost of forming these mounds was borne by the borough, while the expense for plants and care, falls, by subscription, on abutting property owners or tenants, mainly hotel people. Two of the avenues have been treated in this way, and others are rapidly being beautified in similar manner. It is difficult to describe the beauty and extent of these decorations; they have to be seen to be fully appreciated. These public decorations are by no means made at the expense of private displays in the same line, for these latter seem to be more elaborate and artistic than before, as if each individual vied with the collection in making a beautiful display.

Many of our smaller towns are devoid of suitable spaces for parks, but scarcely any have not wide enough thoroughfares that may be treated in a similar manner, or, at least, there are spaces or plots at the intersection of streets which might easily be decorated with trees, shrubs or plants. Individuals are oftentimes slow to respond to the trend of affairs in their own personal properties, but experience has shown that they will wax enthusiastic over a contemplated "public good," when the expense may be made nominal by reason of its division among many. Good roads, well kept walks, shaded streets and bits of landscape architecture in public places, are as valuable to the town or village as are tastefully arranged and well kept grounds to the individual. Such improvements have reached beyond "improvements for improvements' sake," and are on the solid rock of "improvement to increase value."



VIEW OF A BEAUTIFUL AVENUE AT ASBURY PARK.

TOMATOES FOR HOME USE.

MARION RAMBO, IOWA.

There is a popular notion that large tomato plants are harder to make live after transplanting than small ones, but it is a mistake. Large plants will grow as readily as small ones if they are properly transplanted. After danger of frost is passed, get large, thrifty, healthy plants, and set in fresh made hills, one plant in each. The hills should be made only immediately before setting out the plants, and the plants should be taken up with as much root as possible and carefully set in the hill. Of course, if the roots are all jammed down into a hole like a wad, the plant will be very apt to die. The roots should be spread and arranged with care, and the plant should be placed a little deeper in the soil than it was before it had been taken up.

The soil should be worked thoroughly loose, and well manured. It ought to be worked to a depth of at least eight inches. The hills should be four feet apart. Do not think tomatoes will not appreciate manure because they seem to do well in almost any kind of soil; you will find that it will pay as well to manure them as any other crop. The increased yield, and extra size and flavor, will amply reward you for the extra cost of manuring. Fine flavored tomatoes can only be grown in a fertile soil. Be sure that the plants have plenty of sunshine. Tomatoes are especially averse to the shade. They want an abundance of bright golden sunshine if they are to produce a large yield of bright crimson fruit.

When the young plants commence to trail upon the ground, drive strong stakes, about six feet in length, by the side of them, and tie them to it. This will keep the fruit off the ground and allow a better circulation of air about the branches of the vine, and thus enhance the flavor and character of the tomato. If the growth of the plant is too rank, pinch off the ends of the vines, and also the superfluous branches. Give thorough cultivation, and stir the soil frequently for an early and lasting crop of tomatoes.

HOUSEHOLD

Shams.

LUCY ELLIOTT KEELER.

"Hands off!" was the sign over a case of magnificently bound books in the British building at the World's Fair. Several young women, who were evidently acquaintances, stopped for a moment to read the titles, and one, in spite of the printed injunction, put out her hand to draw forth a volume. To the surprise of all, a block of wood fell into her fingers. "Shame on you, England," she exclaimed aloud; "there was no necessity for your bookcases here, and to think that you have filled them with painted shams. Shakespeare and Bacon and Thackeray would despise such empty compliments."

As the girls went out in couples, one pressed the arm of another with a light laugh. "Bravo for Marie and her avowed hatred of shams! Was sincerity her strong point at college?" "We used to envy her her very name," returned her companion, "until her mother came and called her Maria; we were led to believe her the youngest girl in the class until she inadvertently mentioned some memories of the Centennial; she laughed at our plain notepaper until we discovered that she had hers engraved at a stationer's, with a left-over crest; and her sealskin jacket turned out to be plush. Shame on you, Marie," and the roguish girl copied the air of the earlier speaker, "there was no necessity for anything nicer than a plush jacket, and to think you set us all agog with envy!" "She traveled through the South last year with my sister and me," the taller girl continued, "and we spent several weeks in a quiet, inexpensive place near St. Augustine. We drove to the magnificent Ponce de Leon one day for luncheon, and afterward she and my sister went to the parlor to write letters. Unfortunately they each addressed the same person; and while Ruth called attention to the fact that she was making the most of her aristocratic opportunities, and explained our journey in detail, Marie, on the hotel stationery, vaunted the glories of 'this charming spot where we are spending the month.'"

More famous persons than foolish Marie have succumbed to the fleeting honors of hypocrisy. Macaulay wrote a letter to his constituents dated Windsor Castle. He happened to be there a half-hour, and took that opportunity to write the letter, or rather to date it, for he carried it with him ready written. It has been thrown up to him ever since. A famous Italian character possessed a number of wigs of different lengths, which he wore in rotation in order to sustain the impression that his hair was cut from time to time. All who looked at the famous Caroius-Duran portraits at the Chicago exhibition were struck by the folly of the woman who masked the dignity of her eighty years under all manner of false appliances and youthfulness of costume.

It was the fashion of the ancients when an ox was led out to sacrifice, to chalk the dark spots so the animal might seem to be of unblemished whiteness. Let us fling away the chalk, and shake ourselves free from shams! Pretending to be a little wiser, a little richer, a little more beautiful, a little more aristocratic than we really are, degrades us in our own eyes and makes us a laughing stock to others.

Games for Evening Entertainments.

REV. MARION RAMBO.

At a pleasant evening party, given at the parsonage, the following games proved to be interesting and entertaining. For the want of a better title I have called the first "Manual Recognition." I think it is original, at least, as far as our party is concerned, I am sure it is, for none of us had ever seen it or heard of it before. It was evolved in our own brains, as the result of a desire to try something new. One of the party was blindfolded, and the others came to him, one by one, and clasped his hand. It was required that he recognize each one simply by the feeling of his hand. Each one took his turn in being blindfolded until every one had tried his "hand" in the game. A prize was given to the one who recognized the most, and a booby prize to the one who succeeded in recognizing the fewest. Much amusement was afforded by the ludicrous mistakes that were made. There was a young bride and groom present, and neither was able to recognize the other. Of course it was fun to the rest of the company. And then everybody laughed when a brother failed to recognize his sister, or a young lady her best friend.

Another game, which may be old to some, was found to provoke much merriment. Two clusters of thorns, such as grow on the honey locust tree, were procured, and the company was divided into two equal classes. A cluster was given to the head of each class. It was required that it be passed to the foot of the class and back again, each person in the class taking hold of the thorns. The class which succeeded in returning the cluster the quickest two times out of three, was counted the winner. This was a lively game, but one had to look out or he would get his hands scratched.

The memory contest proved to be much quieter, but more profitable, and perhaps none the less interesting. It is an old game, but so good a one can bear speaking of twice. Eighteen small articles were placed in a tray and brought into full view of the entire company, so that each one could see everything. Then the tray was removed and it was required that each one should make a list of the articles from memory. It was very interesting, indeed, to read the lists and observe how some had been able to see things that had not been on the tray at all—not one of the party succeeded in making a complete list. In this game, if it is desired, a prize may be given to the one making the best list, and the booby prize to the one making the poorest.

Little Ones at the Table.

ELEANORA H. WADY.

With the birth of my first baby I made a rule that none of my children should ever eat at the table with their elders until their table manners were quite safely developed. To carry out my rule and still have the children under my eye at meal times, was a problem which I solved as follows: I got a carpenter in the neighborhood to make a plain table of white wood. I think he charged me three dollars, and this included shellacking the natural wood. The length corresponded to that of our regular dining room table; it was two and one-half feet wide, and twenty-two inches in height. This was placed alongside the "grown up" table, where its surface could be easily reached by either of the parents, without rising.

My first infant had a beautiful black walnut high chair given him by a loving relative. You can, perhaps, imagine the dismay of the donor when he found I had cut off the four legs, until the seat of the chair stood but fourteen inches from the floor! The next child had a small chair, wooden, and with wide-spreading legs; being so built it could not easily be overturned. Horrible and pitiful accidents are being daily reported at intervals of greater or less frequency, all over the world, due wholly to the pernicious habit of seating little ones in high chairs. Broken backs, life-long invalidism, injured spines, brain disorders, idiocy resulting from concussion of the brain—these are the chapters which make up the awful story of warning. It is possible your baby would use and outgrow his chair without accident; but not without the constant danger of it. By way of substitute for such danger I am suggesting a condition of things which will be of most positive benefit to the children brought under its rule. I set the little table with its own table ware; small china, diminutive knives, forks and spoons—these are not expensive. One of the latest acquisitions is a set of World's Fair souvenir spoons, with gold-plated bowls, which cost twelve cents each, bought in connection with a certain kind of household cleaner. They brought endless delight to the children, and we should remember that prettily figured china, bright silverware, pure, clean-cut glass and clean table linen, exercise a refining influence on the minds of the small members, of which we may ill afford to deprive them.

Again, the child which is but fourteen inches from the floor may get out and into his chair without aid from others. I allow my five-year-old to wait upon his table whenever possible—and it is possible nine days out of ten to permit this with benefit and without accident. Of course, at the very first, we had to caution again and again, and a few "spills" took place, but the results of our efforts justified them, and none can deny the advantage to the child when he is taught to become independent and self-helpful. The four-year-old girl has "cleared off" her little table herself, and in the last six months I venture to say has not broken as many dishes as a hired girl would have broken in the same length of time! And, finally, if you have thoughtlessly advocated the high chair relic of barbarism heretofore, put it aside and try my plan for a time. It will ease anxiety, rest your back, and help the little ones, all at the same time.

House-Cleaning Notes.

M. B. HOWARD.

Begin this yearly crusade against dust and dirt upstairs, first taking everything from the closets and sorting the "piece bags." Put the ginghams all by themselves in a bag and label them "gingham pieces;" next sort out the pieces likely to be used for patching cloth garments; label them "patching pieces;" treat calico and muslin remnants in the same way. After thoroughly cleaning the closets, hang the bags up, with labels in view, and at any time when the contents are needed there will be no need of tumbling everything out to find the right article. Be diligent, but do not hurry. And above all, if possible, keep your temper. We can work quicker and with less fatigue when we are bright and cheerful than when we are cross and fretful. After cleaning the upstairs, begin with the bedrooms. Mothers will find a medicine shelf in the bedroom of great benefit. Have remedies for croup, colic, diarrhœa, etc., with labels upon each bottle. It will be found a wonderful convenience, but put it out of reach of small, meddlesome fingers. Do not use whitewash for ceilings. It is the cheapest in the long run to either paper or paint them. For a kitchen ceiling, paper would not do, on account of the steam, which might loosen the paper. But you can, with small expense, paint it any color you choose. Olive green or a grayish drab is pretty. You need not have the expense of a professional painter; some member of the family can do the work with a little care. Prepared paints, in any shade of durable quality, can be purchased. Take the tables and chairs out on the porch, and after thoroughly wiping them off with a damp cloth, apply a thin coat of varnish or a flannel cloth dampened in a little linseed oil or kerosene. Rub it well or it will attract dust. White spots can be removed by rubbing them with spirits of camphor. The best way to clean paint is to have ready some whiting and clean warm water, and a piece of flannel, which dip into the water and squeeze nearly dry; then take as much whiting as will adhere to it and apply to the painted surface. A little rubbing will instantly remove any dirt or grease, after which wash the part well with clean cold water. It is far better than soap, and does not require half of the labor. Windows treated in the same way are more easily cleaned than in any other way. Grease spots on the wall paper can easily be removed by putting a piece of common brown paper over the spot and ironing with a hot iron. When a crack is discovered in a stove, through which smoke penetrates, it may be completely closed in a few minutes with a composition, consisting of wood ashes and common salt, made up in a paste with a little water and plastered over the crack. Have ready in the kitchen a bag or a little box tacked upon the wall in some inconspicuous place, with a roll of clean cloth and old linen and court plaster for cuts or bruises, also a little ball of string. They will be found very useful.

After the house is all cleaned, visit the cellar. Vegetables that have wintered there are fast approaching the sprouting and decaying season, and, unless looked after, will poison the air and create sickness, and perhaps death. Many cases of fevers and other diseases may be induced by poisoned air in the cellar. Take your time and clean it out thoroughly. Whitewash the sides to sweeten it, and let the work go on, day after day, without, as well as within. Let the back door surroundings be looked to. Prohibit all throwing of slops at the back door, for that will soon breed disease. Slops

and vegetable matter should be carried far from the house. Let the back yard be kept as clean and neat as the front yard.

Crocheted Doily.

FRANCES H. PERRY.

The charming doily illustrated in Fig. 1 is pure white with an embroidered linen center four inches in diameter, edged with linen lace. It forms a pretty setting for a vase, jar or rose bowl, for the tea or lunch table. The design, developed in finer linen and lace, or in silk, is equally pretty

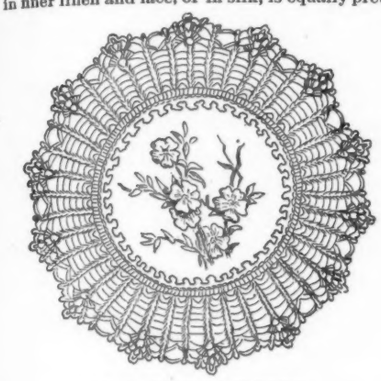


FIG. 1. CROCHETED DOILY.

for a cover for a large pincushion. The doily or cover may be made an especially dainty bit of needlework—seamless, neat alike on both sides—by following these directions:—Pencil a circle four inches in diameter on a small square of linen, and with the crochet linen work the circle in chain stitch as shown in Fig 2; trim off the material, leaving about three-eighths of an inch of it all round, outside the chain-stitched ring; turn the edge over, narrowly, on the right side, and baste it as represented. Then, beginning with the second row crochet the lace illustrated in Fig.3 "round and round" the center, working the trebles into each chain stitch around the ring—two in one occasionally, for there should be forty-two trebles for each quarter section. When the lace border is finished the folded edge of the center piece is invisibly hemmed to the under side of it, around the outside edge of the treble row.

The lace edge of the doily is made in the following manner, and is equally desirable for trimming underwear, pillow cases and children's aprons.

Make a chain of the required length, turn.

First row—Pass two chain, work one treble in every stitch of chain, chain four, turn.

Second row—Pass two treble,*two double crochet in next, chain three, two double crochet in same place, chain three, pass three. repeat from star to end of row, chain two, one treble in last stitch, chain four, turn.

Third row—In the first little loop of three chain* work two double crochet, chain three, two double crochet in same loop; chain three, pass to next lit-

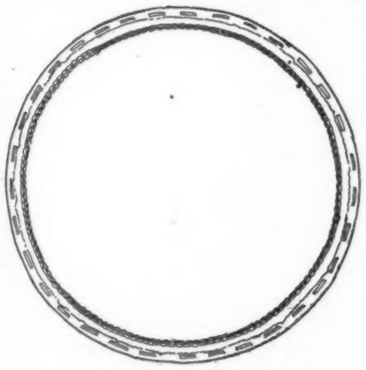


FIG. 2. CHAIN STITCH CIRCLE.

tle loop and repeat from star; so continue till the row is finished, at the end chain two, one treble over last chain, chain four, turn.

Repeat third row (across and back again) as many times as necessary for the desired width of heading; in the sample it is repeated four times, which brings the crochet work to the eighth row.

Eighth row—Same as previous row except that in the second loop, and in each third one after it, are worked two treble, three chain, two treble.

Ninth row—One double crochet over first crochet, *chain two, two double crochet in first loop, chain three, two double crochet in same loop, chain three, five treble in next loop, chain three, five treble in same loop, chain three, next loop same as first one, chain two, double crochet over three chain; repeat from star for each scallop of the border, fastening the last double crochet in the last chain, chain four, turn.

Tenth row—Work in first loop as usual, chain three, two treble in middle stitch of five treble, chain three, two treble in loop at point of scallop, chain three, two treble in same loop, chain three, two treble in middle stitch of five treble, chain three, next loop as usual, chain two, double crochet over two chain, double crochet over next two chain. Repeat from beginning for each scallop, fastening the last double crochet in the last chain, chain four, turn.

Eleventh row—First loop as usual, chain three, double crochet between two treble, chain three, double crochet in same place, chain three, middle loop like first one, chain three, double crochet between two treble, chain three, double crochet in same place, chain three, next loop like first one, chain three; pass to first loop in next scallop and repeat from beginning.

This forms a beautiful trimming wherever a delicate lace-like frill is desired. It cannot be made to draw, or "sag straight," as do many so-called crocheted frills. It should be ironed as one would iron a ruffle.

The European Goldfinch.

M. BOYER.

The goldfinch is, without a doubt, the prettiest of the finch family. It is a merry singer, tame, and attracts the attention of all. In Germany it is known as the distelfink, in America as the goldfinch. It has a conical and pointed beak, very sharp. The tail is short; the plumage of the top of the body is a rich olive brown, varying in shade to almost white on the under parts. The color of the wings and tail is a jet black, the primary feathers of the former being of a golden yellow on the base of the outer web, and the larger wing coverts also have a yellowish margin, which gives the yellow spots on the wings. Small light spots are also at the extremities of the tail and primary wing feathers. A beautiful band of a bright carmine red encircles the front of the head and base of bill, with a black spot at the opening of the mouth. The cheeks are somewhat whitish, and the top of the head black. The male is the prettiest, a characteristic so common in birds. The first plumage of the young is a greyish brown on the back and head, the adult plumage only being shown in the tail and wings.

May is the best month for breeding goldfinches. In their wild state they build in fruit trees, high trees, and some in hedge and low shrub. Their nests are beautiful, made from moss and lined with hair. They lay as many as six eggs—of a whitish color, with a pale bluish-green tinge, slightly spotted with pale red and black spots.

The goldfinch lives upon a vegetable diet, weeds generally forming his food. In confinement canary seed should be their chief food, with plenty of clear water and sand, groundsel, shepherd's purse and chickweed, and occasionally a few grains of hemp seed. Their tameness, bright colors and pleasant song make them most valuable as pets. They become very bold, after getting acquainted with the family. About November they come into market, and cost about two dollars each. Those in full song cost about a dollar more. They can be kept in the regular canary cage.

Gauging.

CONSTANCE B. WHITE.

The stitches of properly made gauging do not show upon the right side, as seen in Fig. 1, which represents a straight band of gauging. Fig. 2 shows the wrong side with different degrees of gathers, which are made by simply drawing the

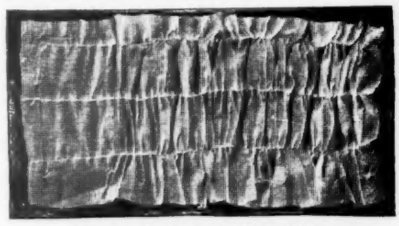


FIG. 1. GAUGING, RIGHT SIDE.

strings tighter to make the gathers fuller, or closer together. For a skirt, of gingham or nainsook, fold the lengths cross-wise of the goods and turn down half an inch from the top edge. Run a very narrow tuck as close as possible to the edge with number 40 cotton thread and repeat this turning down at intervals of half an inch or more. The distance must, of course, be regulated by the size of the garment and the thickness of the material, care being taken to have the same space between each row. After the gathering-strings are all in, draw them up to the required fullness and pull

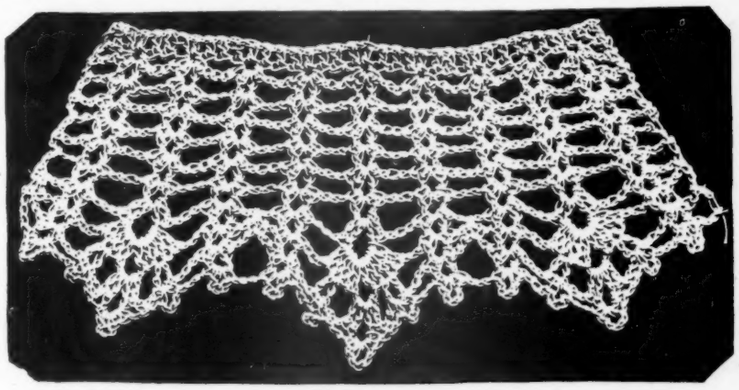


FIG. 3. FRILL LACE, CROCHETED.

from the top to the bottom to flatten the work as much as possible. In cases where the material is very soft, each row should be sewed to a band of thin muslin or a fine cord to keep the gathers in place. For round dress-yoke the material must be cut twice the required width and curved slightly from the top of the shoulder to the middle of the front at the neck. Then proceed as described above, making each thread longer as

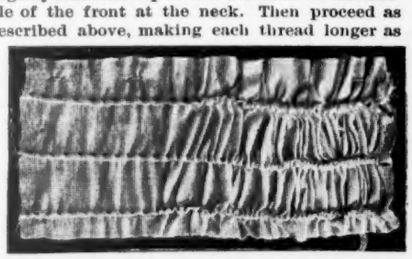


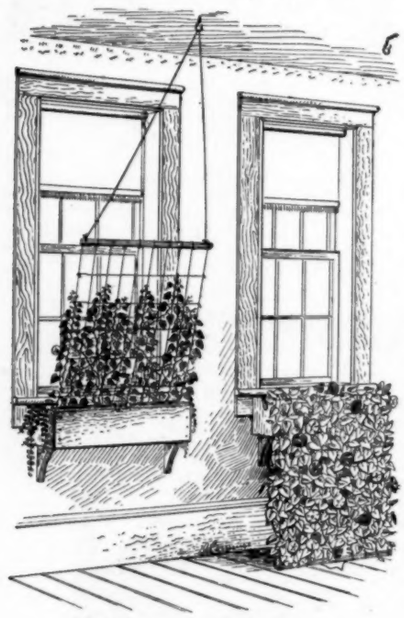
FIG. 2. GAUGING, WRONG SIDE.

you leave the top row, and afterward sew it to a well fitted flat yoke. Gauging may be used as trimming upon all kinds of dresses, night-gowns, and children's garments, whether for in-door or out-door use, and is not only artistic, but extremely serviceable. Another beautiful application of it is found in window shades of colored silk or muslin gathered lengthwise, instead of cross-wise, and finished at the bottom with a full ruffle of lace.

Morning Glories for the Window.

MRS. E. M. LUCAS.

Windows arranged with plants are very attractive when tasteful selections are made, and they are well cared for. Nothing adds more to the beauty of a room, and nothing is more cheering than blooming plants. A window arranged with morning glories looks like an outdoor bank of the dainty little flower bells, and yet it must be planned and watched to bring about this natural grace through cultivation. A box—as long as the window and rather deep—is fastened under a window where the sun shines in. A network of cord is fastened so that when the vines grow large enough they will begin to climb upon it, growing upward and toward the center of the room. The cords are fastened to the edge of the box inside, and when the plants are old enough to remain where they are trained, the net can be dropped to the floor, leaving an overflowing bank starred with bright blossoms of pink, blue purple and white intermingled. The cords or net must not be fastened downward permanently, but as often as convenient the bank should be lifted up when the sun shines, and the windows opened in warm

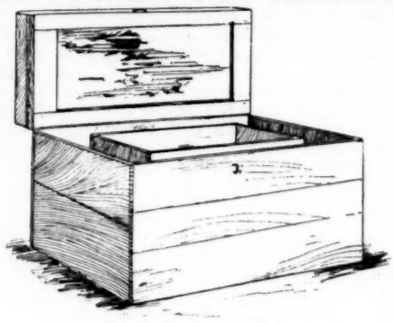


MORNING GLORY WINDOW BOX.

weather to give them fresh air and make them grow more hardily. Besides, this is more convenient when sweeping is done, so that the vines are not in the way and liable to be injured.

Homemade Ice Chest.

The convenience of a refrigerator or ice chest is too apparent to need mention, but many who would like to avail themselves of the advantage of thus preserving and making palatable the food that comes to their tables in the hot weather, are deterred by the expensiveness of the factory-made articles. A very satisfactory substitute can be made at home by procuring a large dry-goods box and fitting a smaller box inside it directly upon the bottom, but with a space four or five inches all around it, which is to be filled with sawdust or other similar material. The inner box should project an inch above the outer one. A box cover should be made to fit the outer box, so that there may be a non-conducting space above the inner box as well as around it. On the bottom of this cover let inch strips be nailed along the sides and ends so that they may fit closely around the upper edge of the inner box when the whole chest is closed, which will make the ice chamber air-tight. An iron pan with a bit of pipe leading down through the bottom can be made to place the ice in, or if the chest is to be placed in a shed, a hole may be bored through the bottom, and the ice set directly on the boards. It will "spend" better if wrapped in burlap or some closer cloth. Movable slat shelves are fitted into the other end of the inner chamber to place food upon. The inside should be shellacked before using, or the pine wood may give a flavor to some articles of



SERVICEABLE REFRIGERATOR.

food, particularly butter. It must be kept clean, and occasionally thoroughly sun-dried to kill the mold.

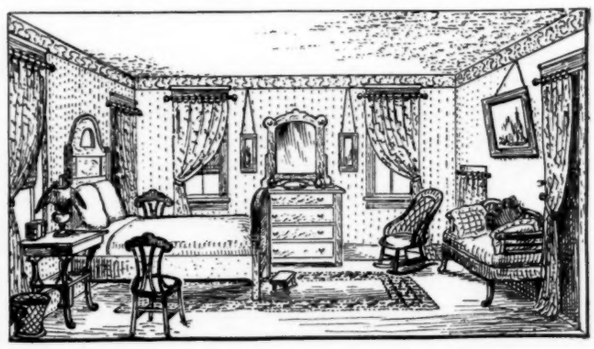
For the Coming Guest.

BESSIE ALBERT.

I once had the good fortune to spend a night at one of the most charming of Western country homes where the guest room was an artistic gem, attractive, tasteful and convenient, a direct contrast to the cold, prim, stiff "spare room" of the average farmhouse.

The room was quite large, but low as to ceiling; the walls were hung with a narrow striped paper in two tones of pale yellow, with a sprinkling of conventional gilt figures. The ceiling was covered with the same paper without the stripes, and the six-inch border was made up of the enlarged gilt patterns with a mixture of pink and blue. The woodwork, doors and floor were painted in this same pale yellow, as were also, two fancy tables, a low rocker and two queer-shaped chairs, evidently heirlooms, all being trimmed with gold bands. The bedstead and dressing table were of the lightest curly maple,—the color from which the tints of the room were taken. The middle of the floor was covered with a large rug in maple shades, with a general dash of pink and blue. The three windows had buff shades and were hung with silkaline curtains having a pale yellow ground with pink roses and blue corn flowers running over it. Pink and blue ribbons tied them back. The low closet door and the other two doors were curtained with the same material made very full.

On the dressing table stood a small pincushion, in lace and ribbons, a blue china hairpin tray, a tall, narrow pink vase for hatpins and shoe buttoner, a few manicure tools on a square tray, a pink comb and brush, a tiny whisk broom, a blue powder box and a handglass, all lay ready for use, on a handsome linen scarf, embroidered in wild roses and blue forget-me-nots. The bed was in perfect keeping; the mattress was restfully soft, the blanket of very light weight and bordered in pink and blue, the spread a white linen sheet,—plainly a grandmother's homespun,—but converted into an heirloom by a wide row of drawn work all round it. The pillow cases, the bolster case and the upper sheet, which were only cotton, were trimmed with a row of very simple pattern of hemstitch. A little, yellow wooden "cricket" stood at the foot of the bed, for use in dressing the feet. None of the little trifles a person from home for a day or so might possibly need had been forgotten. On the table was a pretty little basket trimmed with ribbons, containing a couple of spools of black and white thread, a thimble, scissors, needlebook, and a few buttons in a little silk bag. A small lamp, with a pink paper shade, stood on the table beside the bed with a match tray by it. A pocket edition of poems and a collection of short stories, "to be read while the candle burns," lay, with a prayer book, on the stand. A waste basket, painted and tied up with a big blue ribbon, was not forgotten. The couch was the most unique one I have ever seen of the kind. It was one of those common affairs found at all country furniture stores called "bed lounges," with turned slats up and down the back and across the ends; without springs, but having a very thick mattress, covered with pink and blue plaid gingham. The three great, square pillows were covered with gingham also, one plain pink, one blue, and the third with the plaid; with wide ruffles around, and made to slip on and off for the laundry. The frame of the couch was painted maple color, very sparingly picked out with gilt lines. This room, notwithstanding its beauty and daintiness, could be furnished with a very small outlay, for which one would be more than repaid by the comfort and satisfaction of having such a beautiful apartment in one's home.



A COMFORTABLE GUEST CHAMBER.

Novel Hanging Baskets and Urns.

MRS. W. A. KELLERMAN.

I was tired of seeing old tin cans, wornout wash basins, rusty tin buckets and old paint kegs serving as flowerpots and hanging baskets. It seemed

INEXPENSIVE PLANT BASKETS AND URNS.

to me they might be regenerated. With this idea in mind the children and I made a collection of old tin cans of various sizes, from the pound baking powder cans to great gunpowder cans, of perhaps two gallons' capacity. The smaller cans I could reform with my own hands, but when it came to the large, stiff gunpowder cans I found them too refractory, and was obliged to call for assistance. We were so successful in our efforts, and the enjoyment and pleasure which resulted in consequence, so many times outweighed the trouble which we experienced in converting these unsightly objects into things of beauty, that I would like to tell the readers of the AMERICAN AGRICULTURIST just how we did, that they may do likewise. The baking powder cans were more pliant and, therefore, handled with less difficulty, so I began with them. With a pair of large, old shears I cut them in strips about half an inch in width, and to within an inch or so of the bottom. It is best to mark with a lead pencil or "scribe awl" just where you wish to cut. After the can has been cut as described, bend the strips at their base, outward, making a sharp right angle; then carefully bend them into a compound curve, inclining an inch or more towards the center, and then outward again, according to your fancy, until you have formed a graceful curve. After you have had a little experience in the work, you will be surprised to find how many different shapes you

can fashion from this foundation. There may be almost as much variation as in that "useful line of poetry," "The plowman homeward plods his weary way." When you have succeeded in reaching your ideal, in curves and general outline, take a strong wire — common fence wire, minus the barbs—and form a ring or hoop as large in circumference as you wish your hanging basket, bend the strips over this wire at the top at equal distances from each other. For hanging the basket up, fasten three wires at equal distances to this wire ring, or top of the basket, and join them at their extremity. For bending the strips securely about the wire, a pair of pliers should be used..

The old tin fruit cans must first have the tops melted off. This can be readily done by turning them upside down upon the top of the hot cooking stove. The old-fashioned two-quart cans make the prettiest baskets. They are large enough to admit of more variation in shaping them. These may also be cut with the large old shears, but for a large bucket or gunpowder can a pair of tinner's shears will be necessary. You will not care to buy a pair, but you may be able to borrow, as I did. If you are not so fortunate, you could have a tinner cut them; the expense would be but a trifle, and these large cans may be converted into really beautiful urns. Both baskets and urns are prettiest painted either black or a bright red. Before

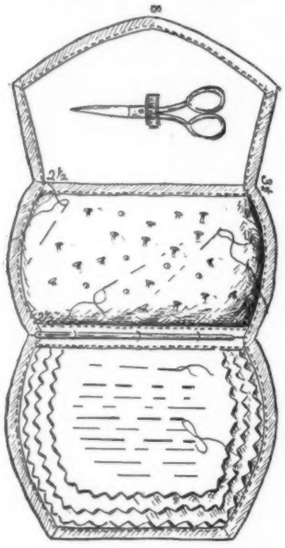


FIG. 1. NEEDLE-BOOK OPEN.

filling them with soil they should be well lined with moss. If you cannot obtain moss in your own woods or neighborhood, you can procure "sphagnum" at a greenhouse, perhaps; this prevents the soil from rattling through the openings formed by the separation of the strips into urn or basket shape, and also serves to retain the moisture.

My hanging baskets and urns were admired by passers-by generally. One large urn, filled with nasturtiums, was a source of pleasure all summer long. Placed here and there in appropriate nooks in the yard, these stands add materially to one's enjoyment. The most appropriate pedestals for your urns you will find ready made in the woods or fields. An old stump will answer the purpose very well, or that bowlder along the road, or the one which has lain in the field, in the way of plow or harvester for years.

A Sensible Needle-Book.

The illustrations herewith show a very handy article to take on a journey, and quite as much in place on the sewing machine at home. It is much easier of construction than the old-fashioned "Housewife." For a foundation cut pieces of wigging, after the dimensions shown in the sketch. Cover each side with woolen, silk, or suede; for the middle section make a small pincushion; bind it on the sides with narrow ribbon, and baste it on; cut several leaves from flannel, pink three sides, and bind together at the top; sew this at the bottom. Tack a loop on the top section for the scissors, and bind all around. Work three loops in buttonhole stitch between the two lower sections, to slip the bodkin through. Fold up and close with a loop and button. An added improvement would be to have a pocket placed between the

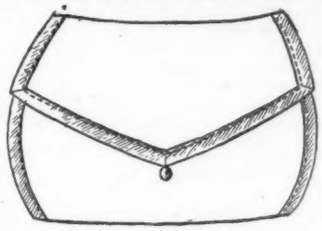


FIG. 2. NEEDLE-BOOK CLOSED.

outside and lining of the top and bottom section, to hold papers of needles. In Fig. 1 is seen this needle-book open, and in Fig. 2 when closed.

Woodbine Table Cover.

MRS. F. E. SLAGHT.

Buy a square of heavy unbleached cotton flannel, which, upon the plain side, looks very much like Bolton sheeting. In each corner draw the outlines of a woodbine leaf measuring nine inches from tip to tip. Take the pattern from a natural leaf if possible. With a common bristle brush paint each leaf dark green, with a shade of red-brown at the tips. Put the paint on very lightly so that the weave of the cloth shows through. Etch all around the outside of the leaves with very coarse dark red linen floss. The veins of the leaves should be worked in dark green, also the stems and tendrils, which should be first drawn with a pencil as nearly like the growing tendrils of the woodbine as possible, and in plentiful numbers. After blindstitching a narrow hem all around the cover, sew on cotton or linen fringe, which should be unbleached, or in shades to match the etching. A very pretty finish is a fringe about two-inches deep in green and white or ecru, which will cost about ten cents a yard. The total cost should not exceed sixty-five cents, and it makes a really elegant looking cover. Any one, whether familiar with the use of paints or not, can surely do the little painting which is required on the leaves. The paints referred to are, of course, the tapestry dyes, which will launder.

Darning Bag.

This convenient darning bag requires three pieces of cream white linen, thirteen inches long, seven wide, and five inches on the slope of the point. Sew together seams out, like a mattress, and bind with yellow ribbon. One side is appropriately etched in yellow filoselle with a design of spools, darner, scissors and needles, and the

A SEWING-ROOM CONVENIENCE.

words "Darning Bag." On the point formed at the bottom and on the three sides at the top where the pieces are joined are bows and ends of picot-edged baby ribbon, while three pieces of wider ribbon are used to hang it up by. A piece of pretty cretonne would make a more serviceable bag, but the one shown in our sketch was made for a bride, for whom it is popularly supposed to be a requisite that even the most utilitarian article shall be of an esthetic nature.

A Magazine Cover.

Magazines are very likely to grow disreputable looking after a very short period of service. The corners and edges turn up and the whole book looks ragged. Now, as in these days magazines form a substantial part of our literature, and are well worth preserving in our libraries, it is not at all a bad idea to keep them as carefully as possible until such time as they are sent away to be bound. To this end a good cover, like the one shown in the illustration, is highly useful. It is made of fine canvas and may be ornamented more or less to suit one's fancy and time. A very dainty and artistic cover has a conventional design of poppies upon the front of it, and the word "magazines" outlined in fancy lettering and in colors to suit the flowers. Pretty ways for adorning the cover are legion, and even a simple "magazines" in artistic letters is not without beauty, and is surely as useful as a more ornate design. The edges of the cover turn in at the top and bottom, with pockets at both ends into which the magazine cover slips. The canvas is merely "whipped" neatly as a finish to the raw edges.

MAGAZINE COVER.

A Novel Clothes Brush.

Our illustration shows a queer little clothes-brush that is as pretty as it is useful, and makes an appropriate gift where one does not care to give anything costly. The bit of a brush is quite easily made, if one has a supply of horsehair within reach. Lay a large handful of the long hairs together in a straight, compact bundle, and bind them securely. Over the place of binding, which is a little to one side of the middle, sew a short strip of red velvet or plush, turning in the edges at the sides and joining the ends with a fancy stitching of silk of the same color. Now you are ready for the dainty handle which is made of picot-edged "baby" ribbon of any color desirable. In this case it is a delicate shade of blue. It passes around the velvet just inside either edge, and ties in two little bows, with a loop between for the handle. The ends of the horsehair are clipped until they are perfectly even and form a stiff brush. The only difficulty possible in the making of the brush is in procuring the hair. If one takes pleasure in docking the tail of the family Dobbin, what a beautiful brush that would make! But it is to be hoped this hint will cost no poor Dobbin his caudal appendage, which certainly belongs to him in the eye of the law of usefulness and symmetry.

SERVICEABLE BRUSH.

A Dainty Lamp Shade.

The shade illustrated herewith is a combination of silk, lace and ribbon. The color is a lovely shade of old rose, the silk and ribbon exactly matching, and the lace being overshot with "set" flowers of white and old rose. The exquisite blending of the three materials makes up much of the charm of the whole. The materials needed are a strip of China silk four and a half inches wide—after it is hemmed at top and bottom—and about twenty-eight inches long, a yard and a quarter of ribbon about an inch wide, a dozen and a half of little brass rings, twist or knitting silk to match the ribbon with which to

HOMEMADE LAMP SHADE.

crochet the rings, and the lace. Somewhat more lace than the length of the silken strip is needed, as it is prettier to "full" it on to the edge. The strip of silk is hemmed on both sides and neatly joined at the ends. Then the lace is sewed to one side, making it more or less full to suit the fancy, though it can hardly be too full. The little brass rings are crocheted and sewed to the top about an inch and a half apart. Then the ribbon is run through them, and the shade is complete. It can be adjusted to fit almost any porcelain shade, and almost any lamp will be transfigured by it. The colors chosen, of course, are immaterial. They may match or daintily contrast with the furnishings of the room, but the old rose color of this particular shade cannot well be improved upon.

A May-Queen Dress.

DORA KEELER.

The illustration of the dress, shown in the accompanying sketch, is for a little girl of four summers, and will require three yards of French gingham, two and a quarter yards of one-half inch embroidery beading, and three yards of Valenciennes lace for the edge of ruffles. The body of the dress is gathered to a yoke of gingham, over which is placed the ruffle, which is five inches wide, with the beading two and a half inches from the bottom, or midway to the neck, where the ruffle is gathered into the neck-band of beading. The neck measures eleven inches, and is completed with an upstanding ruffle of the lace. The edge of the gingham ruffle is also edged with the lace. The sleeves are slightly full at the armsize, and at the wrist, which measures six inches, and which is trimmed with the beading and a full edge of lace, to match the neck. The bottom of the dress is finished with a hem six inches deep, which makes the length of the dress from top of shoulder to bottom of hem twenty-six inches. This pattern may be enlarged for older children, and is equally pretty made of any wash silk or fine nainsook.

FOR THE MAY QUEEN.

Easel and Picture Rack.

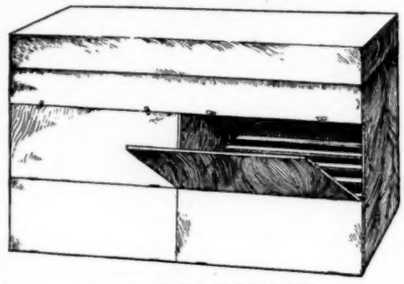
The homemade easel shown in our illustration will commend itself to readers by reason of its attachment for holding unframed etchings, engravings and mounted photographs, which, in these days of cheap art and amateur photographers, accumulate so rapidly in every household. Photographs of great paintings afford splendid opportunities for increasing the knowledge of art of those who cannot see the originals, and it is pleasant to have our store of these things handy where the children can spend many a pleasant and improving hour over them. The sides and cross pieces of the easel are cut from inch-boards of whitewood, cherry, ash, or oak. The round balls can be purchased at a cabinet or furniture repair shop while the curved reeds for front and sides of the picture rack can be cut in the woods or purchased where rattan articles are sold. A rustic effect is produced by leaving on the bark and allowing some of the knots to show. Whitewood can be stained ebony, and ash or oak can be darkened with oil and lamp black.

HOMEMADE PICTURE STAND.

An Improved Moth-Proof Chest.

The large cedar chests that holds the stores of clothing safe from moths and dust are inconvenient in some respects. Their capacious depths are not readily explored to find a garment which proves perhaps to be at the very bottom, to the undoing of the whole pile above it when it is finally reached. Another great objection is that the weight of clothing which is frequently packed into one of them, very severely "presses" those that are in the lower portion of the pile. Persons who require a clothes chest can avoid these difficulties by building after the suggestion embodied in the accompanying illustration.

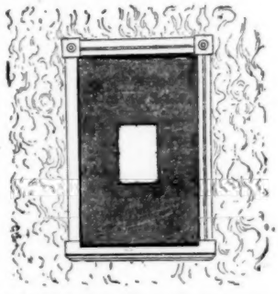
The chest is divided in the center by a partition, and each of the two compartments again divided into three others by two shelves of slats, placed at one-third and two-thirds the distance from the top to the bottom, the lower one being movable. The lower two-thirds of the front of the chest is hinged, as shown in the sketch, permitting ready access to any part without disturbing the articles in the other compartments.



CONVENIENT MOTH CHEST.

Ridding a Room of Flies.

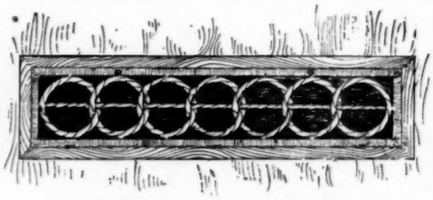
Flies are the pest and worry of all tidy housekeepers, and how to rid a room of them is an unsolved problem to many. This is quite easily accomplished by taking advantage of the flies' habit of flying to the window or place from which light is admitted, and to accomplish this, darken all the windows with a heavy shade, or any material, cutting a hole in one of the shades, over which is firmly pinned a sheet of the common transparent fly paper, and, if possible, have this located at one of the east, south or west windows, from which the most light may be obtained. It will be but a short time ere the flies in the room will be sticking to this paper in their effort to be near the light. This is far easier and more cleanly than placing paper about the room for them to accidentally light upon, or killing them with poisoned liquid, or pyrethrum powder.



AN EFFECTIVE WINDOW FLY TRAP.

A Bric-a-Brac Closet.

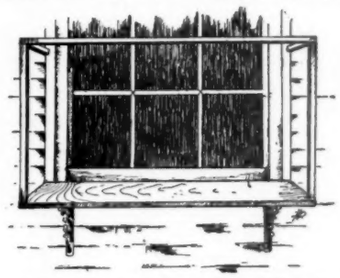
The little sketch given here is designed to utilize some long, narrow space in the dining room, if the closet is to hold ones' fancy bits of chinaware for the table, or in the sitting room or parlor if it shall contain one's curios and collection of bric-a-brac. The door is of open work to show the contents of the closet to advantage, and, at the same time, to protect them from injury, as an open shelf would not do. The fancy work of the door can vary very widely, of course. The illustration is conventional and simple, and quite effective. A member of the family with a "knack" of using carving tools might originate a door to suit himself. The closet might be a little wider and contain two longitudinal shelves, though one is rather more artistic. If the house owns one of the old-fashioned, very high mantelpieces, a closet like this could be set into the wall above it, and give quite an "air" to the room—if that means making it look artistic and pretty.



ORNAMENTAL CLOSET FOR BRIC-A-BRAC.

Combined Shelf and Window Screen.

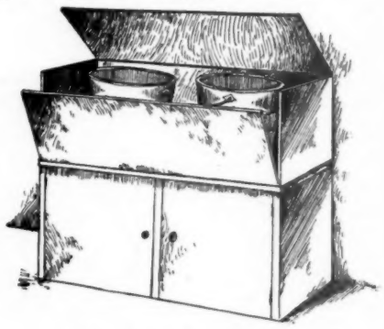
A chance to set pies and other "goodies" fresh from the oven, where they may cool before being placed in the pantry, is dear to the heart of every housekeeper. But the ordinary window ledge and the bench outside the kitchen door afford a very insecure resting place for these dainties, though flies, the family cat, and the neighbors' cats would no doubt vote against any innovation of old ways. The illustration which is here presented shows how security against alien appetites may be secured for pies, cake, sauce, and other articles while cooling, while the entrance to the house of flies and other insects is still guarded against. A broad shelf is placed outside the kitchen window on iron brackets, and from the outer corners of this a wooden frame is erected. Over this frame, both top, side and ends, is stretched wire mosquito netting, the edge of the netting being drawn so as to just meet the lower part of the sash when it is raised to the height of the top of the frame. A screen is thus provided when the window is open, and a broad shelf secured, which is guarded from the outside.



SECURE WINDOW SHELF AND SCREEN.

A Well-Arranged Water Bench.

Where water can be brought by a pipe from a near-by well, or from a spring, the task of bringing it in pails can happily be avoided. But a large proportion of homes are still served with water from a pump in the yard from which the water must be carried to the house in pails. A simple bench usually provides a support for these pails of water which are thus exposed to heat in summer, dust, flies, and an occasional visit, perhaps, from the family cat. The illustration accompanying this shows how water can be kept cool in summer and perfectly protected from cats, flies and dust. When the pails are to be filled, the front, which is hinged, is let down, the cover raised, and the pails when filled are as easily set back as upon an open bench. The front and the cover can then be closed and the water kept clean and cool. The closet below will be found exceedingly convenient for numerous uses that will occur to any housekeeper living in the country



CONVENIENT WATER BENCH.

Summer Styles for Young Girls.

This month we must consider the needs of our young folks, the wee girlie just out of the nursery, the bonny schoolgirl and the winsome lassie in her early teens "standing with reluctant feet where the brook and river meet!" Little Four-Year-Old wants plenty of simply made print frocks that can be easily laundered, and for general play-dresses nothing is so good and serviceable as brown linen, as it shows less soil than most materials, and wears and washes admirably; while next choice for useful morning gowns come the checked ginghams in red and white, blue and white, green and white, etc. Three yards are sufficient for a tiny girl's slip frock, plainly made with a short yoke, full sleeves, and a sash of the same set in the seams under the arms. For better wear are the prettily striped percales, the dainty corded dimities and white muslins with pin dots of color. These are generally fashioned with waists, either full or plain, to which a full gathered skirt, hemmed round the bottom and corded at the top, is attached, while the trimming consists of epaulette ruffles of embroidery or of the dress fabric cut on the bias, starting at the middle of the waist in front and extending over the shoulders.

At least one handsome white dress should be found in every child's wardrobe, and wealthy mothers order them by the dozen. A charming French model, that might readily be copied at home, is of fine nainsook, ornamented with embroidery of a very open pattern. A shallow yoke is formed of cross rows of insertion, with a collar band and edging. To this the little baby's waist is gathered and likewise to a belt of insertion, while the bishop sleeves have wristbands of scalloped edging. The skirt, consisting of two and a half breadths, falls just below the knee, is sewed to the belt and trimmed around the bottom with scalloped embroidery, above which are set two rows of insertion to match. Indeed, the long Empire skirt, in which our small women were as uncomfortable as they were picturesque, is fast disappearing. Under the short French frocks, stiffly starched petticoats are worn to give the fashionable expansion, while those of soft silk or wool often have an extra inside skirt of stiff lawn basted in permanently. For cool days, little Miss Goldenlocks will require a short, double-breasted coat, and this can be made very economically of a yard and a half of French flannel, or often can be contrived out of a skirt of red or blue serge that has been laid aside. Big, full sleeves, a deep, double-breasted collar and large white buttons will give it the *cachet* of the season, and make it quite a stylish little garment.

The white leghorns adorned with field flowers and enormous bows of white ribbons still remain in vogue for children's best hats, or else they wear cunning shirred silk bonnets with full crowns and fronts stiffened with reeds of wire. The trimming is a frill of lace around the face and two bows of watered ribbon perched on top.

Among the prettiest fabrics displayed this spring are the exquisitely fine wool challies, especially those with satin stripes or embroidered silk dots and figures. They are charming for old and young, and will make some of the sweetest frocks for girls of eight and twelve years. These have straight skirts, with a five-inch hem, falling half way to the shoe tops, and a full belted waist on which are three rows of insertion outlining a yoke. This is for a high bodice, but, if designed to wear with a guimpe, the neck is cut half low and finished by a quaint little fichu of silk or velvet edged with écru embroidery. A twist of silk goes round the waist in place of a belt, or older lassies may add a tiny basque.

The printed flannels showing small designs and stripes on navy blue, green, pink and yellow grounds, are liked for little maid's everyday dresses, and the French twilled flannels in plain colors divide favor with serges for school, seaside and mountain wear. These, too, have the yoke and belted bodice, and sleeves with a drooping puff from armhole to elbow, while they are quite elaborately trimmed with narrow, white wool braid. Gingham frocks made last year can be worn this without appearing out of style, as there is really little change in the manner of making. Berthas are in high favor for waist trimming, and there is a tendency toward double ruffles, one falling over the other. Lace is largely used on all wash goods, as is, also, the open embroidery that imitates guipure. White and black moiré ribbon two inches wide, is chosen for shoulder knots and for belts, tied in a goodly sized bow with short ends.

Dotted Swiss muslins come now not only in white, but in all the gay tints, as rose, lavender, Nile green and yellow. They are made up for young girls with low waists over a fitted lining, and have two gathered berthas, one much deeper than the other, scalloped around the edges. Misses in their teens wear much the same print gowns as their younger sisters, differing only in the length of the skirts; but their street suits resemble their mamma's, varying merely by being fastened in the back. All-wool goods, and silk and wool mixtures, are used for these girlish costumes. The bodice is sometimes round with the circular attached basque, and shows a full front of soft silk crossed by bands of lace between revers; sometimes a fichu almost covers the waist, while again the trimming consists of epaulettes, stock collar, cuffs, and belt of silk or velvet. Some of the skirts are double, while others are plain and shaped to the hips by gores. For a graduation dress, one of the satin-striped challies mentioned above would be exceedingly pretty, or a white crépon combined with watered silk. Other dressy summer gowns for Sweet Sixteen are of light-hued crépon, trimmed with the so fashionable butter-colored lace; and double skirts of taffeta silk worn with a waist and sleeves of accordion-plaited chiffon.

A Happy Home.

MARY WASHINGTON EARLY.

One of the most important requisites for a happy home is self-control, especially a good command over temper and tongue. There are many occasions when the peace of a family might be preserved by a timely recollection of the proverb that "silence is golden." Many of the efforts necessary for the preservation of peace and happiness in the home circle are of a negative kind, and consist in refraining from the things that jar on others, such as rudeness, impatience, fault-finding, and other "lesser forces that spoil the vine." Yet this negative work is as important as the most energetic exertions of bustling activity, perhaps even more so.

It is of great importance that courtesy be strictly observed in the family circle. It is the lubricating oil that makes the jarring machinery of life go on smoothly. Insist on your children observing the rules of politeness towards each other as strictly as towards strangers. Above all, let husband and wife do this towards each other, and the children will easily and naturally imbibe the same spirit, and form the same habit. Innocent amusements are one of the elements of a happy home, and none is more refining than music. We should cultivate as a fine art the habit of talking cheerfully and good humoredly in the family circle,—excluding harassing and depressing topics, except when it is absolutely necessary to introduce them.

A little social enjoyment is necessary, in order to complete the circle of home happiness. It is not right always to seclude ourselves in the privacy of home. We should sometimes open the doors, and admit others to share its pleasures and comforts. In doing this, we will receive as much as we give, for it will enlarge the circle of our ideas, our affections and our sympathies. Flower culture is a great addition to the happiness and general attractiveness of a home. Indeed, no place seems thoroughly homelike without their lovely and fragrant forms. Being a pursuit that is carried on in the fresh air and sunshine, flower culture adds to our health, besides gratifying our taste and inclinations.

But when all is summed up, it seems to me that the great value of home life lies in something better than even happiness itself. It gives us the finest and best discipline life could possibly afford. It teaches—if we will receive its training aright—lessons of unselfish love, patience, forbearance, forgiveness, self-abnegation, and other lovely virtues and graces, such as no other school on earth could possibly afford. In a high state of development, home life reminds me of a well-trained orchestra in which the members, by dint of practicing with each other, and tuning their instruments (i. e. their dispositions) to accord with each other, learn to give forth a lovely and harmonious symphony that is pleasing to all persons.

The May Housewife.

Cardinal Salad.—This very handsome salad may be made by adding beet juice or lobster coral to a plain mayonnaise dressing. The latter, of course, is to be served with a lobster salad, the former with a vegetable salad. Arrange lettuce, cress, sliced beets and tiny radishes in a salad bowl. Garnish with hard boiled eggs and pour a cardinal mayonnaise over all.

Eggs a la Tripe.—Put into a stewpan three ounces of butter, and when melted stir in one tablespoonful of flour; when smooth add four large onions that have been boiled and minced; simmer slowly five minutes, stir in two tablespoonfuls of cream, and cook five minutes longer. Slice six hard boiled eggs and lay in this sauce. When hot through send to table.

Cake Pudding.—Soften half a pound of stale cake in sweet milk; beat egg light with two tablespoonfuls of sugar and a quart of milk. Put a layer of the softened cake in a buttered dish; spread with preserved fruit and continue with successive layers of cake and fruit, the top layer being of cake. Then pour over the mixture of milk, egg and sugar and bake half an hour.

Strawberry Cream Cake.—Make a light sponge cake and bake in jelly tins. Soak a quarter of a box of gelatine in half a cup of cold water. Whip a pint of cream and put it in a granite pan, standing this inside of another containing cracked ice. Add to the cream half a cup of powdered sugar and a teaspoonful of vanilla sugar. Stir the gelatine over boiling water until it is dissolved, add it to the cream, and stir at once until it begins to thicken. When the cakes are cold put a thick layer of this cream over each and stand strawberries thickly on; pile one on top of another and let the top layer be cream and strawberries. This is not so costly a dessert as it seems, as being very rich only a small quantity is required.

Beefsteak With Bearnaise Sauce.—This is a good dish to make when eggs and butter are cheap. Indeed, except for a company or a once-in-a-way delicacy, it is pretty costly even when they are cheap. For the sauce, put a gill of vinegar over the fire, with two tablespoonfuls of shallots or young onions minced fine; simmer until reduced one-half, then set back to cool a little and add, stirring slowly, the yolks of four eggs, then two tablespoonfuls of very strong, rich meat gravy, and lastly four ounces of butter. Stir constantly with a wooden paddle, and if it becomes too thick add a little water. It should be of the consistency of mayonnaise. The French add minced parsley, tarragon and chives with the shallots. This is sufficient for a four-pound steak, and must be spread over it as soon as broiled, and sent at once to the table.

Breast of Veal Braised With Mushrooms.—Remove the largest bones from a breast of veal, and fill the cavity with a forcemeat made of stale bread soaked and squeezed dry; add an onion chopped fine and fried in a little butter, and a seasoning of salt and pepper. Skewer into a compact shape and brown on both sides in a frying pan, using a little butter. Lay some slices of salt pork in a saucepan, put on the piece of veal, cover the pan tightly, and simmer slowly for one hour without raising the lid. If placed over a slow fire and kept very tightly covered, so that no steam can escape, it will cook in its own juices without burning. Then add half a can of mushrooms and a very little boiling water, turn the meat and cook for another hour, always slowly. Lay on a hot dish, slightly thicken the gravy, and color with browned flour in the thickening.

Soup Maigre.—A very good soup can be made with the bones and trimmings taken from the veal, four large sliced potatoes, a quarter of a pound of salt pork, one onion, and half a carrot; simmer for two hours with two quarts of water, then pass through a sieve and set away to cool. Skim off the fat that congeals on the top, heat the soup, and throw in a tablespoonful each of minced parsley and young celery tops. If it shows any signs of settling, add a level tablespoonful of flour wet with a little water. Dice of toasted or fried bread thrown in the tureen are a nice addition. The next day, after trimming off all the meat good for a hash or for croquettes, put the the bones and remaining portions over the fire with the gravy, a pint of tomatoes, and three pints of water; simmer for an hour and a half and strain. Send boiled rice to table with it, and let the hostess put a spoonful of the rice in each plate of the soup.

BOYS & GIRLS.

Plucky Minnehaha.

PHILIP MARSTON BRASHER.

"Now, fellows," cried George Winney, "we are to wait here till the settlers get their town built and then we'll attack 'em."

"What shall we do while we're waiting?" asked one boy.

"O, just act like real Indians—go hunting, play games, or do anything."

A very extraordinary looking lot of boys they were, for each one's face was covered with strange designs done in charcoal and colored chalk; they wore blankets on their shoulders in place of jackets, and odd feather ornaments on their heads. No wonder that a gentleman, strolling by, stopped to ask, in amazement, what they were doing.

"O, we're playing early settlers," answered George.

"And what kind of a game is that?"

"It's one we invented ourselves. You see, sir, the settlers are down there at the brook founding a town. We are Indians living among these rocks, and pretty soon we'll swoop down on the town and pretend to kill the settlers, or drive them away, because we want no white men in our country."

George had been reading Indian tales. The gentleman laughed at his explanation and walked on toward the hotel where he and all the boys, besides, were spending the summer.

There was only one squaw in the Indian camp, as it had been decided before beginning the game that girls could take no part in "early settlers." One girl among the children in the hotel made up her mind, however, to share in the fun, and quickly dressing herself in a lovely Indian costume, which had once done duty at a fancy dress ball, and now lay hidden in her trunk, she followed the Indian party.

"Now you just go back to the hotel," cried one warrior, as the maiden approached.

"I will not," spunkily replied Miss Bessie Blair.

"There are to be no girls in this game," shouted several other warriors. "Go back to the house."

"There's going to be one girl in it," retorted Bessie, "and I am that one." Her assertion was emphasized with an energetic stamp of a moccasined foot. And Bessie stayed. The chief said she could, and that settled it.

"I'm glad she came," said Harry Travis, in an aside to another warrior. "She's prettier than a Christmas card in that Indian rig, and those bead fixin's and the jewelry in her hair are as becoming as cranberry sauce is to turkey."

"That's so," returned the other savage; "and it's a heap sight more like a real Indian camp to have a squaw in it."

So Bessie's coming was finally voted, after all, to be a pretty good thing.

"Now," she said, when this point was settled, "you must all call me Minnehaha."

"Minnie who?"

"Minnehaha," and down came that moccasin again so vehemently that the warriors all promised without any more teasing.

MINNEHAHA AND TUK-I-TALL.

"Now, boys," cried Harold French, who had command of the 'settlers,' "here's a site for our town. It's level, and the brook will keep off Indians on that side. Some of you build a stockade over in the other direction, and then we'll be safe. Here, lend a hand with this tent, one of you; and Jack, you bring a bucket of water. Tom, will you build a fire?"

"What for?" demanded Tom. "Isn't it hot enough for you without?"

"Why, who ever heard of a town without any fire at all?" returned Harold, indignantly. "We've got to cook supper, too."

"All right," said Tom; "I forgot about that."

"Isn't there anything to eat but bread and corn?" asked Harold of one of the boys who had been detailed to raid the hotel kitchen and secure a supply of provender for the settlers' use.

"No," replied the settler addressed. "We were just digging into the apple barrel when the cook took after us and we all had to run like deer."

"Well," said Harold, "we'll have to make the best of it, then," and after thrusting the ears of corn into the fire, where it was expected they would roast nicely, he tried his hand at toasting pieces of bread, and, for want of experience in such work, made a sad failure of it. The corn, when withdrawn from the fire, was as black as your hat, and the bread, rescued at last, resembled burnt cork.

Stolen fruit is sweetest, however, and at "supper," which was then announced, although noon had barely come, every boy declared his food delicious, because any feebler praise would have been too much of a shock to his preconceived notions of the joys of camp life.

"Now we'll pretend it is night," said Harold, as soon as supper was over, "because the Indians ought to attack us in the darkness, so you fellows make up beds in the tent, and I'll keep watch."

"What are we going to make beds of?" inquired one of the boys.

"Of leaves and grass," replied Harold; and in obedience to these orders the settlers soon gave themselves up to feigned slumber, while Harold, loaded down with a wooden gun and a variety of equally harmless small arms, seated himself outside the tent to watch. The effectiveness of his vigil was a good deal impaired, however, by the chorus of unnatural snores which issued from the "sleeping" settlers, in volume to drown not only the noise of an enemy's approach, but also to give the enemy just the information he wanted as to the location of his intended victims. George Winney, in his character of Indian chief had assumed the name Tuk-i-tall, which he translated "universal conqueror." He had sent out scouts from his camp among the rocks to discover, in true Indian fashion, what the palefaces were doing, and now sat with his braves in council to hear all the scouts' reports.

"What have my young men seen?" inquired Chief Tuk-i-tall, with a becomingly solemn air.

"We have seen the palefaces," answered Will Travis, one of the scouts. "Their wigwams are toward the rising sun, on the river bank, not far away."

"Are their young men more numerous than the leaves on the trees?"

"Not much. They ain't got more'n we have—we can lick 'em— O, I forgot," said Will, apologizing for his use of familiar idiom, and resuming the stilted language generally supposed to be the proper thing in savage councils. "They are but our equals, and our young men can kill them all."

"'Tis well. Your eyes are like the eagle's, my son. Ere the moonlight mingles with the rays of another dawn, our enemies' scalps shall dangle at our belts. Let my young men prepare to march."

Minnehaha was ordered to remain in camp, but the warriors now began a "sneak" on the palefaces' settlement, in the execution of which they tried to glide through the bushes with that snake-like motion peculiar to genuine savages when stealing upon a foe. But this style of progress gave them much trouble, for their blankets and other toggery continually caught on briars or branches, and in the effort to preserve their costumes intact the warriors themselves were frequently thrown down by lurking roots and stumps. These mishaps provoked many impatient exclamations which, together with Chief Tuk-i-tall's ill-suppressed commands for silence, made the expedition anything but the surprise party it was intended to be, and Harold, watching in the paleface camp, discovered, during a lull in the snoring chorus, that danger was at hand. He lifted the tent curtain and cried:

"Men, awake! Indians approach! To arms, but make no noise."

The settlers, by this time heartily tired of lying in feigned sleep, a prey to inquisitive ants and spiders, rushed forth to their places behind the stockade; and the Indian party, seeing that a surprise was out of the question, left cover and charged with a yell loud enough to have filled a real Comanche's soul with envy.

The battle was one such as any healthy, spirited boy finds joy in. It was all good natured, but both sides fought hard. Buttons flew in place of bullets; and clothing, not flesh, received the worst gashes.

"Hi! Will! help me make the chief a prisoner," cried Harold, struggling with Tuk-i-tall. Will came on a run, and helped overcome the warrior, who was then bound hand and foot, and lashed to a strong root.

"Hurrah, lads!" shouted Harold, encouragingly, "now we got 'em! Beat 'em back. Run 'em off."

"Fight, braves!" shrieked the prostrate Tuk-i-tall. "Avenge your chief! Come, unbind me."

In spite of this frantic appeal, however, the besiegers were beaten back into the woods.

During all this excitement Minnehaha had waited in camp, and at last her patience gave out. She advanced cautiously toward the "settlement," only to learn that the battle was being carried on elsewhere. Her attention was drawn, however, to a fire which had begun to spread near the tent, and, while watching this, Minnehaha discovered a boy lying motionless on the ground at some distance away, and surrounded by smoke and flame.

"Now I wonder if it's part of the game to leave that boy there, or is he really dead?" inquired the girl of herself. "Any way, he is in a very dangerous place, and it isn't right to run so much risk just to have a little fun. I'll get him away."

Moving carefully between piles of blazing leaves Minnehaha was soon beside the boy and saw, to her terror, that it was Tuk-i-tall, alias George Winney. Romantic nonsense was forgotten in face of real danger, and Minnehaha screamed for aid, angry tongues of fire on every hand having so increased as to make the situation very grave. But Indians and settlers were all too busy to hear anything else than their own commotion, and Minnehaha perceived that she must rely on her own efforts in this emergency. Even George himself had become insensible from smoke and terror, after trying his best to summon help from the crowd of boys. But they had not heard him, either.

"George, George," cried the Indian maiden, "get up. Don't you see the fire? You will be burned to death."

There was no answer, and as this was the first time Minnehaha had ever seen an insensible person she was puzzled. But time was precious. She looked about and, seeing a bucket of water near, quickly brought it. Having extinguished the most threatening flames by pouring water upon them, the girl turned again to George, and discovered that he was tied down. Then she applied herself to loosening his bonds, and though teeth and fingers bent themselves willingly to the task, it was interrupted several times by fresh outbursts of flame, which had to be quenched with water brought from the brook.

At length George was freed and dragged to a safer place by his little rescuer, who was almost exhausted by this last effort.

At this minute some one amongst the fighters saw smoke at camp, and in two seconds more race prejudices were forgotten in a grand rush to see what was burning, Indians vying with settlers in eagerness to arrive first.

"Hello! what's this?" cried Harold, pausing in astonishment as he caught sight of Minnehaha, in a fire-stained costume that had once been brilliant with colored embroidery and beadwork, as she knelt by chief Tuk-i-tall, who was still insensible, and whose hair and clothing had been badly singed.

Bessie told her story and the boys cheered her wildly, while Harold exclaimed:

"Good gracious, child! don't you know you put your life in great danger?"

"I suppose I did," responded the maiden, "but I'm Minnehaha to-day, and an Indian princess must feel no fear."

This sentiment provoked a cheer vociferous enough to bring Tuk-i-tall to his senses, which effect was followed by an examination of his injuries. These were not serious, though he was a sorry looking object, externally.

"Now, fellows," cried Harold, "we'll bury the hatchet and put out the fire," and done it was, very quickly.

"Come, let's take the princess home in style—make a litter, make a litter!"

Every boy took up the cry and a litter was soon made of poles. It was decorated with green branches, the water bucket, inverted, was placed for a seat, and Minnehaha was ceremoniously escorted to take possession. Then four stout boys picked up the litter, with its precious burden; Tuk-i-tall marched ahead, swinging a club like a drum-major; Indians formed a guard on the right, and settlers on the left, and the procession moved with songs and cheers toward the hotel, where, of course, it drew everybody to windows and piazzas.

Five minutes afterward the story of Bessie's heroism and George's danger was on a hundred tongues. The boy's mother rained kisses on Bessie's blackened face as she cried over the child, in gratitude, and a dozen other mothers cried on general principles. Everybody else cheered, and Bessie was voted "true blue," although she was really quite black, just then. She became the idol of Keene's hotel for all summer, and, while gracefully accepting the homage paid her, she ruled her playmates with amusing dignity. But they liked this, under the circumstances, and Bessie was in demand for every game played during the rest of the season.

The Little White Sister.

EDITH DILLINGHAM.

It was early spring, and up through fresh, tender grass, lifting itself up higher and higher toward the bright, blue sky, appeared a "Little White Sister." People generally called her the "Wild Strawberry," but not so the clover and daisies.

As the days grew warmer she, at the sun's bidding, threw off her green winter wrappings and appeared in her white, spotless garment. When people passing her and others like her said, "What a quantity of strawberries we shall have this year," the sisters looked at one another in wonder.

But still the sun shone and the breezes blew, while happy were the "Little White Sister's" childish days. One night she fell asleep and slept for fourteen whole days and nights. On the fifteenth, when she awoke, she found, to her surprise, that she was all clad in red.

She was greatly frightened, and asked the ant, mosquito, cricket, spider, and the toad what was the matter with her, but each had its own troubles and perplexities to think of, and passed her indifferently by. But the white daisy said:

"Why, little sister mine, do you not know the story of your ancestors? A long time ago Dame Nature told the 'flower tribe' in a certain field that she would reward the one who behaved the best during the year by changing him into a strawberry.

"Now, it was a great honor to be a strawberry and of some use in the world, and they all tried hard to be good. It was one of your ancestors who won the prize. So, little Miss Rosiness, that is why you are changed."

It was not long ago as I wandered down to that green spot I saw Little Miss Rosiness, round and plump, with laughing mouth and rosy cheeks. Around her sat, in silent admiration, the bumble-bee, ant and mosquito, the cricket, spider and toad, while from her airy height, the sweet daisy said:

"Dear Little Miss Rosiness, thou hast indeed a treasure. Guard it well and do not give it up until the right one comes."

"Ay, ay, until the right one comes," answered the laughing berry, while still the sun shone and the breezes blew.

Peggy's Fourth of July Radishes.

APP. M. SMITH.

"O, mamma, every girl in our Sunday school class must earn a dollar in the next two months to help pay for the new library," exclaimed little Peggy Smith, as she came rushing into the house one bright Sunday in the latter part of May.

"Well, how are you going to earn your dollar, my little one?" said Peggy's father, as he threw down the AMERICAN AGRICULTURIST which he was reading, and looked at the little enthusiast with an inquiring gaze.

"I don't know, papa, unless I raise some radishes and sell them to the neighbors. You know you were talking the other day about how much a little girl might make on a tiny garden of one rod square."

This settled it, and the next morning Mr. Smith and little Peggy were out in the garden before breakfast, fixing a piece of ground one rod square. It was decided to take a nice little corner in the garden for their purpose, and after digging up the rich sandy soil, and cleaning it thoroughly with a rake, Mr. Smith made a little fence around it and gave Peggy a cupful of mixed red and white radish seed of the variety known as Olive Shaped.

"But how shall I plant them, papa?" said little Peggy.

"Dig little furrows one foot apart and one inch deep," said her father, as he watched her seize the hoe and commence. When she had finished, there were just sixteen rows, sixteen and a half feet long. These were all planted with seed scattered about a half inch or less apart in the row, and nicely and evenly covered.

At breakfast Peggy said, "Papa, how many radishes will I put in a bunch, and how much can I get for them?"

"You ought to figure that out yourself."

"I'll tell you how to do it, Peggy," said Johnny, the older brother—"you find out what radishes are worth at the store, and then guess how many seed you planted in a row, and find how many radishes they put in a bunch, and then you can figure it up."

"What do you have to pay for them at the store, mamma?" asked Peggy.

"Five cents a bunch."

"But how many are in a bunch?"

"Usually about fifteen or twenty, I think."

"Now, papa, how many seeds did I plant in a foot of row?"

"I should think not less than thirty, and likely more."

"Then there would be about two bunches in a foot."

"But all the seeds do not make good radishes, though I think half of them will."

"Well," said Peggy, "that would make a bunch to every foot of row."

In an instant, Peggy was at the blackboard, and in a few moments had figured out 264 bunches at five cents per bunch, and had the astonishing result of $13.20 as the proceeds from one square rod of radishes.

"My! my! What a big lot of money," said Peggy. "Papa, can I give all that to the Sunday school?"

"You may give all that you can make from that square rod," said her father in a somewhat doubtful tone. "But maybe the worms will get into them, and the drouth come and dry them up, or it may be that you will not find buyers for all of them at five cents per bunch."

"But I will help her," said Johnny, "keep them

clean and growing fast, and they say when radishes grow fast the worms do not get into them."

"Well, but there is lots of work in cleaning them nicely and tying them up in neat bunches."

"Never mind, Peggy," said her mother, "I will help you tie them up and clean them ready for market."

Every day the children and mamma watched these radishes, kept every weed pulled out, and the earth well, but not excessively moistened. The weather was just right, and warm days and showery nights came in quick succession. The radishes grew luxuriantly, and, at the end of four weeks, the bed was filled with as fine radishes as any gardener ever saw. Then came the question of selling them.

Early the next morning before the children were out of bed, Mr. Smith was out in the garden pulling the nicest and largest radishes in the bed. He secured a great basketful, and throwing them into a tub of fresh water, waited for the children to appear so that he might teach them how to prepare them for market.

In a few minutes Johnny and Peggy and mamma were all bending over the tub with caseknives in their hands, ready for the work.

"Now," said papa, "you must pick up one radish at a time, gently scrape off the little tender side roots, leaving the bulb smooth and clean, then cut off the taproot just at the bottom of the bulb, then pick the yellow leaves from the top (if there are any) so that the tops will all look green and fresh, and then dip the radish in the water to clear it of all rubbish. The cleaning then being finished, throw them in a pile together, and they are ready to tie up. Be careful to throw out all gnarled and bad looking ones, and you will have a lot of radishes that will sell anywhere."

In an hour's time there were just fifty bunches of bright looking, crisp radishes, red and white, mixed, piled up in a basket ready for market. Each bunch contained from fifteen to twenty radishes, or an average of about four radishes from each foot of row in the square rod.

"Five times fifty are two dollars and a half," said Peggy, as she clapped her hands.

"But you haven't got the money yet," said Johnny.

"O, but we will get it," said Peggy. "You said you would help me, and you and I will take twenty-five bunches each in a basket and sell them all along the street before school time."

Mamma and papa both gave their consent to this plan, and as soon as breakfast was over, the children started out with their precious loads. The radishes looked so much nicer and prettier than anything that had been seen at the city stores, the little peddlers readily sold all they had within four blocks of their own residence, and were back home within an hour with $2.50 in money.

Thirty bunches were gathered the next morning and disposed of in the same way. Twenty bunches followed the third morning, making one hundred in all. The fourth morning there were not enough in the patch ready to sell, and so Mr. Smith advised the children to suspend operations for two or three days until more could grow to maturity.

But as soon as the little peddlers stopped, neighbors, who had had a taste of the radishes, began to send to the house for them, and two of the Main street grocers, who had seen them, sent also for a supply for their stores. All applicants were told to wait. After three days the marketing commenced again, and another hundred bunches went out and were eagerly taken.

It was now within four days of the Fourth of July, and as there was to be a great celebration in the city and a free dinner under the trees in Potiphar Park, and a corner-stone laying of the new Court House, Mr. Smith advised the children to let the radishes grow until then, and negotiate with the dinner committee to furnish the long tables in the grove with Fourth of July radishes. In the meantime the radishes must be watered every night with diluted liquid manure, and made as fine and large as possible.

In accordance with Mr. Smith's suggestion, mamma and Peggy went to see the dinner committee that evening, and agreed, for the sum of five dollars, to furnish one hundred superior bunches of radishes, mixed, with white and red ones, and tied with a blue ribbon, thus combining the patriotic colors of red, white and blue, and giving a most happy effect to the appearance of the tables.

Papa and Johnny rigged up an old barrel, set it on a sloping platform, and filled it with manure from the barn, and by pouring water in the top, soon secured a barrel of rich manure water, and every night the patch was copiously drenched with a mild solution of this fertilizer. The days and nights were warm, and to use a common expression, the radishes "jest jumped."

The night before the Fourth, Johnny and papa started to pulling, and before sunset had gathered two bushel basketfuls, and were at work cleaning them in the back yard. Being unable to finish before bedtime, they were up bright and early next morning, and by nine o'clock, with the aid of Peggy and mamma, one hundred beautiful bunches were deftly tied up in neat and attractive style, ready for delivery.

"Fifteen dollars! Whew!" exclaimed Johnny, "isn't that a big lot of money to get off such a little piece of ground?"

"Who would have thought it?" quietly observed Mrs. Smith, as she enjoyed the satisfaction of the children at the unbounded success of the enterprise.

As for the Sunday school, the teachers and the superintendent were astonished and pleased beyond description. It was ordered by vote of the school that all Peggy's money should be expended in the purchase of books that tended to promote a love of fruits, vegetables and flowers, and that each volume so purchased should have inscribed on the front blank pages, the words "Bought with the Proceeds of Peggy Smith's Radishes."

A Test of Manhood.

AD. H. GIBSON.

Henry Gilbert was the only child of a poor widow, whose sole support was derived from washing, sewing and mending for the people of the Western town in which she lived. He was a bright, useful boy of fourteen, and always ready to do whatever he could to add to their puny household revenues.

Sometimes Henry found a job at gardening, or feeding and caring for horses, cows and poultry, or running on various errands, for which the neighbors willingly paid him small sums.

The time for attending to these various employments was usually before or after Henry's school hours, for poor though she was, Mrs. Gilbert was desirous that her boy should secure as good an education as the wealthiest merchant's son in the town.

Often when Mrs. Gilbert had taken in an unusually large washing, he would rise very early, make the fire, then carry all the water needed, after which he would rub out many of the heaviest clothes, that his mother might not find it so hard. All this he frequently performed before the first bell rang for school. To his schoolmates, the idea of a boy of past fourteen, staying out of school (as he sometimes did) to help his mother wash, seemed simply ridiculous.

So in many ways they began to annoy him, and, without realizing it, they made school quite unpleasant to Henry. Sometimes in school hours they would slyly caricature him on their slates as "girl-boy," in big aprons and huge bonnets. Henry was too much of a man at heart to inform his teacher of their rude treatment, and resolved to bear it all in silence. And he did not wish to worry his mother by telling her, although he longed for her sympathy.

Henry's chief tormentor was Fred Wilcox, the son of the leading banker in the town.

Fred was the exact age of Henry, and, being smart and good-looking, was very popular with the girls and boys of the school. His father's high standing helped him, too, and gave him great precedence with his schoolmates.

One day, at the noon recess, Fred Wilcox stepped up to Henry, as he was preparing to leave the room, and, with a significant wink at his allies, laid a small package in his hand.

"There, Bridget," he said, addressing Henry with a sneer, "is a present for you."

The boys and girls who had not yet run home for their dinners crowded around Henry, their faces full of curiosity.

"Open it and let us see what it is, Biddy," cried Fred's principal auxiliary.

But, without a word, Henry laid the package down unopened on one of the desks, and tried to escape from the crowd that hemmed him in.

"Hold, fair Bridget! You must appear in the togs suitable to your worthy office!" cried Fred. And Fred's word was law with his school-fellows.

"Boys," Henry cried pleadingly, "let me go home. I never harmed any of you."

"Bridget wants to get home to her washing," mocked Ned Dolliver, with a rude laugh.

While four boys held Henry firmly on the floor, Fred took from the package a tiny calico apron which he pinned to the front of the captive's coat. Then he tied a child's calico bonnet on Henry's head.

When Henry struggled to his feet, he presented a ludicrous spectacle, and the boys circled around him, laughing rudely and cheering loudly.

With flashing eyes and anger-flushed face Henry tore the things off and flung them from him, saying:

"You are no gentleman, Fred Wilcox, and I hope to see the day when you'll be sorry for this. I don't think your father and mother would be proud of you now. A boy in your position could use his spare time in doing better things than making fun of somebody who happens to be poor." Then he rushed out of the school room and ran toward home.

One cloudy Saturday, Henry, by his mother's permission, was fishing in a goodly-sized stream about a mile outside the town, when, on looking around a bend, he saw Fred Wilcox, Ned Dolliver, and two other boys of their set, swimming in the creek.

"Hello!" cried the auxiliary, catching sight of Henry, "if there isn't Bridget fishing!"

"Let's go down and duck Biddy," suggested Dave Traylor. "That'll be fun."

"What do you say, Fred?" asked Ned, waiting for his leader's approval.

Now if Fred had acted out the dictates of his heart, he would have said: "No, boys. Let Henry alone. We've mistreated him long enough." But he refused to utter the words. He was afraid of losing his popularity with the boys.

"Let's not bother ducking him," said Fred, "but let's swim around the bend and scare the fish away."

"All right," approved the auxiliary. "Come on, boys!"

And down the creek they swam, shouting and plunging through the water, creating enough confusion to frighten the finny tribe into the deepest holes that they could find.

Henry's face flushed with indignation, but he did not reply to one of the taunts which they flung at him. Instead, he drew in his line and hook, and prepared to leave the spot.

Then the boys derided his skill as a fisherman. "Why don't you catch more fish, Bridget?" shouted Ned Dolliver.

Before Henry could get his line untangled from the scraggy branch of a tree, where it had caught, his tormentors began to fling water upon him, and when at last, the unruly line was freed from its entanglement, his clothes and face were wet with the muddy water.

Then, with a shower of rude words, the boys started to swim up the creek in the direction which Henry was going. It was their purpose not to give him an opportunity to fish again that morning.

The current became deeper and swifter, as they proceeded, and one by one they all swam back, except Fred. "Come on; don't be afraid!" he called to his retreating companions. But they did not obey him.

The next second he uttered a cry of fear and pain.

"Help, boys! Quick! My legs are cramping!"

They heard, but not one moved to Fred's rescue. They gazed helplessly back with white, terror-stricken faces, as they saw their friend being drawn down with the current and under the deep water of the creek.

"Help! Help!" came another faint call from the drowning boy. But, led by Ned Dolliver, the boys made a dash for shore, abandoning him to his fate.

Fred's white face had appeared above the water for the second time, when the strong, active arms of Henry Gilbert caught him, and after a hard struggle bore him safe to the bank.

When Fred opened his eyes, it was not his auxiliary whom he saw, rolling him over the ground to restore him, but the boy whom he had so thoughtlessly ridiculed.

Then Ned Dolliver and the others came back. They had Fred's clothes, but were ashamed to face either their friend or his deliverer.

"Boys," Fred said, rather weakly, as Henry as-

sisted to dress him, "it's all right, your not coming to help me. I'm not going to hold it against you. But from now on I want you to know that Henry Gilbert is the most manly boy in our school, and, if he'll let me, I'm going to be his friend."

And that is the way Fred apologized to Henry before his associates for his past rudeness.

Three weeks after this incident at the creek, the school closed for the summer.

"Fred," said Mr. Wilcox one morning at the breakfast table, "we need a trusty boy in the bank to run errands, carry messages, etc. The pay is good, but he must be strictly honest, and not afraid to work. Do you know a boy in town who you think will suit me and suit the place?"

"I do, father," returned Fred quickly.

"His name is Ned, and I call him your 'auxiliary?'" guessed the banker, smiling.

"No." Then suddenly: "An auxiliary is something that helps, isn't it, father?"

"I believe so. Isn't Ned always at your heels to assist you in all your plans?"

"Yes; but the boy I know for the place is a more trusty auxiliary than Ned. He will help when a fellow *needs help*," said Fred warmly.

"Who is he?"

"Henry Gilbert."

"I don't know him. What claim has he for recognition for this position?"

Fred was confused at first. He had never told his parents how near he had come to losing his life in the creek that day.

But here was a chance to reward Henry. So he related his adventure at the creek, and freely confessed how rudely he had acted toward his brave rescuer.

Mr. and Mrs. Wilcox went that very morning to call on Mrs. Gilbert. Of course Henry secured the position immediately, which enabled his mother to quit washing. He and Fred are both honorable young men now, and are warm friends. Through honesty and real ability Henry has reached the position of cashier in Mr. Wilcox's big bank.

Our Puzzle Contest.

When the five flowers in the vase and the six articles of fruit in the plate are formed in their order, the initials of each will spell the name of a goddess. Give the names of the five flowers, six fruits, and the two goddesses. For the first and neatest correct answer we will give a year's subscription to the AMERICAN AGRICULTURIST, for the second best answer a book, for the third best answer a souvenir spoon, for the fourth best answer a penknife. Answers must be addressed to the Puzzle Editor, AMERICAN AGRICULTURIST,

ILLUSTRATED ACROSTIC.

52 and 54 Lafayette Place, New York, and must be in the office before June 1.

THE ANSWERS TO THE FEBRUARY PUZZLE.

The following names can be found in the diagram of the February puzzle. We omit the name of the play for want of room. Only one character of the same name was allowed, although it may have occurred several times: Antonio, Adriana, Adrian, Curio, Conrade, Ceres, Dardanius, Egeus, Ford, Iris, Lucio, Lucius, Lucilius, Luciana, Lion, Nyne, Peter, Puck, Pedant, Rugby, Snug, Speed, Troilus, Tilinius, Trinculo, Thurio.

THE PRIZE WINNERS FOR FEBRUARY.

1, Mrs. C. S. Strong, New York; 2, Lillian Wright, Texas; 3, M. A. Preston, Michigan; 4, Alice Tracy, Mississippi; 5, Sadie E. Sawtelle, Missouri.

OUR LITTLE FOLKS.

Wimbletot at the World's Fair.

S. JENNIE SMITH.

Wimbletot had made up his mind to go to the World's Fair. It seemed to him that everybody had gone or was going but himself and his mamma, so it was no wonder he wanted to go. So he took his big straw hat from the nail, felt in his pocket to see if he had the five cents his uncle had given him, and hurried down the street.

On and on he trudged, and yet he seemed to get no nearer to the fair. So when he saw a large boy he went straight up to him and inquired, "Won't you tole me where's the World's Fair?"

"Why, certainly," the boy answered, with a laugh. "You're standing right in front of it; see?" and he pointed to a tall building that had pictures on the front of it.

Of course, that must be it. Wimbletot went proudly up to the door. "I want to go in," he said to the man at the entrance, and handed him the five cents.

"Well, we generally charge a dime, little fellow," the man said, "but seeing that you're such a small customer, we'll let you in this time for a nickel."

It wasn't much of a World's Fair, after all, Wimbletot thought; "there didn't begin to be the number of folks he expected to meet, and there was nothing to look at but queer people on high stands. Then where were Mrs. Morris and Johnny?

"Ain't Miters Morris here?" he asked a girl whose hair stuck out all over her head.

"Did she say she was coming?" asked the girl, looking interested.

"Oh! yes, and lots of people in our street's coming—that's why I did—only mamma, she stays home."

The Albino wondered if they were really going to have a crowd at last.

Wimbletot had been gazing curiously at the girl. At last he said, "Won't your movver comb your hair?"

"My hair *is* combed," she replied, with dignity.

Next he came to the Bearded Lady, and asked, anxiously, "Is you a papa-mamma?"

She smiled at the little questioner, and wanted to take him in her arms. But that frightened him, and he ran away from her.

Wimbletot soon grew tired, so he started to go home. When he got outside he didn't know which way to turn. It was beginning to grow dark, and what was he going to do? Oh! how he wished he had stayed away from the World's Fair. Presently he saw a familiar form, and there was actually his own papa coming along the street! Wimbletot was soon in his arms, telling the astonished man that he had been to the World's Fair, but didn't like it at all.

Mr. Wimble explained that he couldn't have been there, as the Fair was a long distance off, and he told the little boy how naughty it was for him to go away without his mamma knowing it.

"I won't never want to do it again, anyhow," he sobbed, on his papa's shoulder, "'cause I was frightened at the papa-mamma, and the girl with mussed hair was cross, and anything might happen to a little boy whose dear movver isn't wiv him. And I don't want to go to a far-off World's Fair when I got so tired to this one."

A Brave Little Girl.

IDA KAYS.

Florence and Olive were busily playing with their dolls when papa came in hurriedly with the startling query: "Will you go down into the cistern, Florence? The man that is fixing the windmill has dropped an iron into it. I don't want to take the top off to go down myself, but I can let you down easily enough."

But persuasion, entreaty and bribe were alike useless; Florence dared not venture.

"Olive, won't you go for papa?" said the mother, quietly.

The little four-year-old hesitated but a moment, then said, "Yesh, I do det i'on."

Papa was quite certain the little one would repent of her decision. The hole looked dark and big; and, indeed, it was, being twelve feet deep and six feet across. There was a barrel of water in it, but the bottom was rounding like the bottom of a bowl, and the edges were not covered. Papa tied a rope around Olive, then she clasped it firmly with both hands and he swung her over into the box, and down, down she went until her feet almost touched the water. Then papa swung the rope again like the pendulum of a clock until she could gain a footing outside of the water. She ran around until her bright eyes spied the iron. Rolling up her sleeve she fished it out and held it fast in one hand, the rope in the other, until she was safe at the top again.

"Well, there are not many little shavers would have done that," said the strange man, as he felt

"WON'T YOUR MOVVER COMB YOUR HAIR?"

in his pocket for a nickel. Papa kissed her and mamma clasped her in her arms and carried her to the house.

Was not that a brave deed for a little four-year-old girl to do? And which do you think pleased her most, the stranger's praise, her father's kiss, or the pretty red dress he brought from town the next day?

How a Squirrel Helped Sell a Farm.

CHARLES N. SINNETT.

Mr. Nason wished to buy a small farm where he could take his family from the heat of the city in the long days of summer.

"We want a place that has some nice fruit trees on it," he said to his little Jamie, whom he had taken along with him. "And I should like a brook quite near the house, so that you children could all have many plays by it. There is a pretty place," he added, as he glanced up the road.

"But we're being watched from the corner of that barn," said Jamie, with a bright twinkle in his eyes.

"Just where?" asked his father, as he stopped the horse and gazed in wonder. "But I hear a brook running over the stones down there to the right; that is one fine discovery."

And then how merrily papa laughed when he looked where Jamie pointed! Right on a piece of board that was nailed on the side of the barn, across the road from the farmhouse, sat a cute little squirrel, with his tail turned up over his back.

"It says something on the board. Guess it's 'Farm for Sale!'" cried Jamie, as he clapped his hands in delight. He was right.

"And the fruit must be good here, by the way that the squirrel seems to enjoy it," said Mr. Nason. "There must have been a very kind family living here, or the squirrel wouldn't be so tame."

"You're right about that," said a man, as he came out of the barn. "The children were all good to the birds and all such things, and they'd never have thought of selling the place if their father hadn't died last spring and they been obliged to go and live with an uncle of theirs in the city."

The place was purchased that very autumn, and "Squirrel Farm" was the name that they gave it.

Southwestern England.

Perhaps one of the principal charms of this region is that there is nothing to call us rudely back to nineteenth century cultivation. In all probability the face of this extreme portion of the Western Peninsula has changed but very little, if at all, since the very earliest times. It is still a weird, strange region. Says a recent writer: "Broken into rough steeps and valleys, treeless on the higher ground, where the moors blaze with furze and heath, the coloring of which, owing to the moist atmosphere, is unusually brilliant, granite 'cairns,' as they are here called, breaking up at intervals, grey church towers rising as landmarks over the wide, desolate wastes, and here and there a glimmer of the sea beyond its tremendous barriers—the 'island' of this broad peninsula affords precisely such a landscape as is the most appropriate setting for rude monuments of unknown age, such as abound throughout the district, and are, many of them, still wrapped in provoking mystery." Such a district seems well fitted to be the scene of the fierce storms which from time to time sweep around the coast. The spot on which the first and last house in England is built, and for many miles round about it, must be the same to-day as it was when the early traders from Phoenicia came to these shores for tin.

The granite-bound coast cannot have receded like the soft sandstone shores of South Devon, or like other parts of the English coast. The visitor to this rock-piled, storm-swept coast can well understand how it is that so many legends cluster around it. It is still believed that at certain times an apparition like the spectre ship of Pathcumo—a black, square-rigged, single masted vessel, may be seen about nightfall to pass steadily through the breakers of the shore, then to glide over the sands, to ascend the valley, and to steer away across the heath for an inland village, where it vanishes like smoke. Strange to relate, no crew is ever seen, and no sound is heard. Like the phantom ship, nothing but harm comes to those who see this weird craft. Readers of the late Prince Albert Victor's "Cruise in the Bacchante" will remember that one of the seamen saw a vessel, which disappeared in a fog, and that the next day this man fell from the mast head and was killed; also that the captain of the vessel was taken seriously ill at the same time. The actual appearance of the phantom ship is vouched for by several independent witnesses who were accompanying the royal princes. Of course these are nothing more than coincidences, but they are remarkable, even to that extent. There are still to be seen in the old village of Chysoiter, not far from Land's End, acres of the remains of the hut town, lying half-buried in furze and fern. These were the habitations of the early Cornish miners, whose history goes back for centuries until lost in antiquity.

One of these quaint hut clusters, of which the hut town is composed, has been excavated by Mr. W. C. Borlase, a celebrated Cornish antiquary, and in one of the circular chambers he discovered the wood ashes of the hearth, and near by "a square block of stone, apparently the old accustomed seat beside the long-extinguished embers." He also found a smaller chamber which had evidently been used as a kitchen or a place for smelting tin. A mill and stones used in grinding tin ore were also discovered, while near by was found a primitive sort of trough, close to which lay a piece of metal, which, though not sufficiently fused, had clearly passed through the fire. Coins of a late Roman period have also been discovered, and would point to the fact that the huts must have been occupied during the Roman period and later. The pilchard fishery is the most important industry of this part of Cornwall, and a very large amount of capital is invested therein. The yearly produce averages from 20,000 to 30,000 hogsheads: while it is recorded that in one day no less than seventy-five million pilchards were taken in a single district. In the spring time the pilchards congregate off the Cornish coast, and later in the year they combine and approach the land in dense shoals led by a selected chief. Indeed, they are so numerous at this time as to discolor the water and to impede the progress of vessels. While the tin and copper mines of Cornwall have declined, the pilchard fishery has increased in importance.

F. C. CHAPPELL, Cornwall, England.

Irrigation in Idaho.

Irrigation is as old as agriculture itself; and yet it is as much a mystery as the newest science of the age. In the West the artificial application of water to growing plants is a profound study for progressive cultivators. The Eastern gardeners and fruit growers are, of late years, giving the subject earnest attention. I believe the greatest benefits to the tillers of the soil in the future will come from experiments in the use of water.

There are great possibilities in the idea of sub-irrigation. I had a plot of raspberries that were quite unsatisfactory after the first crop. They had been watered very copiously in furrows between the rows. This method, after the first season, made the ground very hard and sterile. Under these conditions the crop was a failure. The rows were eight feet apart. Between two of the rows I dug a trench two feet deep. In this I placed a V-shaped trough upside down. This I covered over, leaving a drain with a free outlet. The irrigating was then done by running the water through the underground drain in the manner that it was run through the other rows. While the surface irrigation gave unsatisfactory results, the sub-irrigation gave me a perfect growth of bushes and a grand yield of berries.

In a patch of tomatoes I dug a trench between two rows and arranged a waterway two feet under ground by placing an eight-inch board over a small channel cleaned out of the bottom of the trench. The water was run through the little channel when irrigating in the same quantity and at the same time that I watered the balance of the patch. The yield where the water was applied under ground was that of any other two rows in the lot. In experiments with other vegetables and flowers the results have been encouraging. I believe the future gardeners in the East, as well as in the arid regions of the West, will practice subirrigation. I believe water properly applied will make the question of fertilizing a simple one in the East, as it is in the West. In many kinds of soil water brings abundant fertility.

NEWTON HIBBS, Nez Perces Co., Idaho.

Feeding by Clock-Work.

A few years ago, I made an extra manger at one side of the stall and secured a lid with hinges, all neatly fitted, so that the horse could not reach his feed until the lid had been raised. The lid fitted within the sides and ends, so that a horse could not raise it with his nose or lips. Then, an old broom handle was screwed fast to the top of the lid, and the end, about two feet in length, was allowed to extend directly back into the feed room. At the end of that broom handle a tin can was attached, into which I put small stones until the weight of the can and stones would go down and thus raise the lid so that a horse could eat his feed in the manger. An alarm clock was then placed in a little cupboard over the end of the broom handle. A small hole was bored through the bottom of the clock case directly beneath the large wheel of the alarm part. Then, a small wire was attached to the free end of the broom handle, and a loop was made on the other end of the wire. The wire was made just long enough to extend up through the hole in the bottom of the clock case to the wheel in the clock. Then the feed for the morning meal was prepared and put into the manger the night previous. The lid was then closed and the loop of the wire was hooked on one of the teeth of the large wheel, and with the alarm was set to go off at five o'clock in the morning. The wire attached to the wheel kept the lid securely closed. But as soon as the alarm went off the wheel started, and before it had made half a revolution the looped wire slipped off the cog of the main wheel, and the weight at the end of the broom handle descended sufficient to elevate the lid so that the horse could come to his feed. The rude device never failed to open the lid at the desired hour. As the horse was always to be harnessed at seven o'clock, I found that arrangement exceedingly satisfactory. When I did not feel like rising at the earlier hour, it was cheering to consider that the horse was properly fed in ample time before he would be taken from the stall. Several mangers could be thus arranged, and the lids all opened by one clock.

SERENO E. TODD, Essex Co., New Jersey.

Agriculture of the Cliff Dwellers.

In the wilds of Colorado and Arizona are found extensive ruins of habitations, which, from having been built in the face of steep cliffs, have received the name of cliff dwellings. These ruins have lately been explored by scientists, and in them have been found numerous human mummies. These people were of ordinary stature, well formed and had hair of a blonde color, which goes to show that they were not like the red Indians of the present day. They knew the art of spinning and weaving, the making of ornamental cooking utensils, and the art of brick making. But what is of still greater interest they raised corn, cotton, beans, pumpkins, and other vegetables. That these crops were raised by them is indisputable, as I have seen great quantities of each that were taken in a dried state from their dwellings. It is interesting to note the great improvement in the corn of the present day over that which was raised by the cliff dwellers. The corn of the latter was very small, both in the kernel and in size of the ear. This contrast goes to prove what a wonderful effect human selection and good cultivation can produce on plant life. There were found in these cliff dwellings robes made of feathers, also blankets made of wool and cotton, children's toys and crutches for the use of some invalid. Where these people came from is a question archæology is not yet able to answer. But that they were an agricultural people, admits of no doubt, and that they were surrounded by hostile tribes is also evident, as they were forced to take refuge in their almost inaccessible abodes on the steep cliffs.

W. J. MARTIN, Apache Co., Arizona.

Swine Breeding in Indiana.

My neighbor and I were talking about the hog question last week, and he was telling me about the trouble he had in preventing his sows from eating their young pigs, especially in the early spring. In the course of the talk he spoke of an old friend of his that had a Chester White sow, with a fine litter of eleven pigs, in the barn. In those days it was very common to allow sows to make their beds in the woods and fields, and in a few days the pigs would go, one at a time until, often there would not be one left. It was often thought that the foxes or some other animal had taken them. This old farmer had been missing his pigs, one at a time, until there were seven left. My neighbor suggested that the sow was probably eating them, which aroused the old man's temper, and he said: "If I knew she was, I would shoot her."

My neighbor little thought that a man would be so foolish as to kill a large hog, weighing over three hundred pounds. But he went home and took his gun to the barn loft and watched till noon without any results. After dinner he returned and resumed his watch. In about an hour the sow attacked one of the pigs and was making a dinner of it when he fired away and made his words good. I do not know whether he took care of the orphans or not. But the punishment, though severe, certainly did not affect other hogs, for they still continue to eat their pigs occasionally.

As this was near the time of year when the little pigs begin to make their appearance, I told my neighbor that I had been very successful in preventing sows from eating their pigs by going to the butcher shops and buying a few pounds of fresh beef scraps and throwing to them, or what was even better, a beef's head or large bone at which they could gnaw for a week and get a little flesh that would satisfy the craving for meat of some kind. Some think that roots and vegetables of various kinds will satisfy the need, but I have not found them satisfactory, alone.

J. G. HOLT, Henry Co., Indiana.

Northern Colorado.

Fort Collins is a town of about 3,000 inhabitants, situated on the Poudre river, which heads in the Rocky mountains. It is surrounded by a splendid farming country. As the rainfall is deficient, the crops are watered by irrigation. The soil is very productive; in fact, almost any crop can be raised where water can be had, with the exception of corn. The nights are too cool for that crop. Alfalfa is the main reliance for hay, as it is used for feeding purposes, and cattle are fattened here in

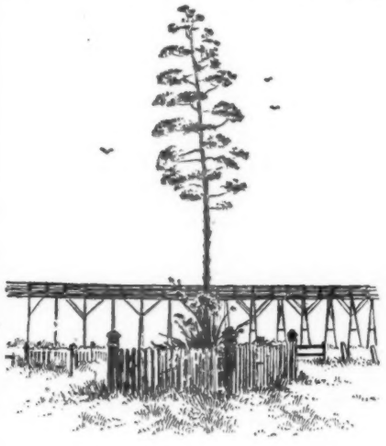
the winter months and shipped to Kansas City or Chicago in the spring. All kinds of vegetables grow to perfection. Irrigable farming land brings from $60 to $125 per acre, according to the water rights. Some owners have priority rights in the ditches, which makes the land more valuable under them. Small farms, from ten to twenty acres, seem to be in demand for gardening, some selling as high as $150 per acre. The State owns 320 acres here upon which the agricultural college and its farm are located. There are 140 students this year. The boys are required, in connection with their other studies, to do two hours daily work in the shops or on the farm.

JAMES L. VEAZEY, Larimer Co., Colo.

The Century Plant at the Kings River Graveyard.

Perhaps no lonelier abode of the dead now exists within the pale of civilization than the little graveyard on Kings river, California. Since Central California has been inhabited by white people, this immediate section has been notorious on account of malaria, typhoid and other fevers. That it is inhabited by rational Americans is due, not to its healthfulness or salubrious climate, but on account of the great fertility of its soil and the extraordinary facilities afforded for irrigation; in fact, it is the birthplace of the system in California. This particular spot, known for many years as the Lower Graveyard, is now neglected and overgrown with weeds; the fences have rotted and fallen; even the marble slabs, erected by loving hands to the memory of their dead, have sacrificed their beauty to the elements, and show the signs of decay common to all their surroundings. The visitor, climbing over the accumulated rubbish of decades, searching here and there for the resting-place of some friend long since departed, finds himself treading on hallowed ground, as he reads the words to loving memory inscribed.

About eighteen years ago, the funeral train departed from a freshly-made mound, on which a small century plant was to begin anew the struggle for existence. Since then the living have died, the young have grown old, and times have changed, but the plant grows. The accompanying engraving, made from a recently taken photograph,



THE KINGS RIVER GRAVEYARD.

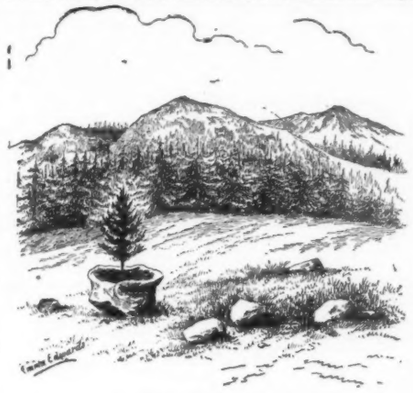
shows how Nature has asserted herself in this example of the living. It now stands forty or fifty feet high, and in full bloom, like a diamond in the rough, comes out in handsome contrast with its surroundings. The famous Kings River Lumber Company's flume appears in the background.

CYRIL MARR, Fresno Co., Cal.

Rock Valley, Idaho.

In Washington county, Idaho, midway between the Great Payette Lakes and the beautiful valley of Salmon Meadows, lies a gently undulating hollow, encircled on all sides by the pine-covered mountains. It is called Rock Valley from the numerous boulders and rocks scattered irregularly about its surface, as if hurled haphazard by some prehistoric giant.

Traveling a road scarcely recognizable in places, and indicated generally by the "blazed" pine or fir trees marked by the axmen of a recent surveying party engaged in laying out a new road, one comes upon the little valley suddenly. So thick is the growth of pine, fir and tamarack in the cañon and up its sides as far as the eye can pierce, that the team is often in serious danger of colliding with one or more of the forest giants, and at times has to be backed to find a road wide enough to admit the width of the wagon. One forgets all annoyance in the contemplation of these stately lords of the wild, whose branches tower toward the sky,



A GLIMPSE OF ROCK VALLEY.

and whose massive trunks stand in such majesty of strength about us. It was a wise provision which the State of Idaho made when she enacted a law whereby her magnificent forests were to be protected for a term of sixteen years. It will prove one of her most wonderful sources of wealth.

In this lonely little valley is to be seen a rather curious freak of nature. Among the numerous boulders scattered about, stands one considerably larger than the others, shaped somewhat like a heavy, square bowl, rounding at the bottom where it rests squarely on the earth, and hollowed deeply at the top, with a heavy, thick rim surrounding it. In its general appearance, which is shown in the accompanying sketch, it is much like the old stone mortars of the Indians so commonly found in the Coast Range mountains of California. The deep cavity or hollow was filled with rich soil, and shooting up from its center stood a lusty young pine, spreading its green branches upward and seemingly proud of its exalted position.

How it ever happened that a seed fell there is a matter of conjecture. Some thrifty squirrel may have found the hollow boulder a safe place for its winter hoard of pine nuts, and out of its store left this one germ to be covered safely out of sight by the earth, watered by rain and snow, and warmed by the sun, until it finally swelled into life, forced open the flinty, brown shell in which it slept, and, sending its roots down into the rich soil, established its right to its singular home. However it may have been, there it stands, a delight and curiosity to the summer tourist, who, in search of health and pleasure, chances to pass over this picturesque route on his way to one of Idaho's most beautiful and magnificent points of interest—the Great Payette Lakes.

EMMA EDWARDS, Washington Co., Idaho.

Irrigated Fruit in the Rocky Mountains.

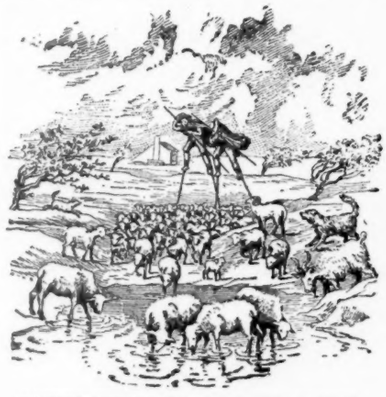
The insect pests which ravage the orchards of both California and the East, are either very scarce or totally unknown in Colorado, and the labors of the horticulturist, as well as his losses, are comparatively abridged. The apple scale, which is so virulent a pest in other States, is absolutely unknown in Colorado. Yet the apple scale took the large sum of $400,000 from the fruit growers of Illinois last year; in Missouri it took half the crop, in Kansas a fourth, and in Indiana one-sixth. Other illustrations of a similar nature might be furnished in favor of the Colorado grower. When it is possible to buy three hundred pounds of flour for the price of a barrel of apples, as can be done here it will be readily seen that the man who raises grain when he can grow fruit, makes a mistake.

Another advantage offered the fruit grower in Colorado is that the industry may be put on a paying basis inside of three years, by using the ground between the trees for growing vegetables and small fruits. The cost of planting an orchard, including the purchase of nursery stock, need not exceed $25 an acre, and by planting other crops, as already suggested, all further outlay can be easily met, thus making an orchard practically self-sustaining after the first year, and affording a profit after the second year. An industrious, prudent man with $1,000 can secure and plant from twenty to forty acres of the very best land in the fruit belt that with ordinary care and judgment will yield inside of five years a net income of not less than $300 an acre. Though these figures may sound somewhat exaggerated, yet they are under, rather than over, the average results achieved by the Colorado fruit grower. A final advantage the latter possesses is that by means of irrigation he is enabled to absolutely control the moisture absorbed by his trees. All familiar with the subject know that moisture is one of the most important factors in imparting that exquisite, juicy flavor so desirable in fruit. Under the magic influence of its judicious distribution, the size and flavor of any fruit may be immeasurably improved. Even the Ben Davis apple of the East becomes a juicy, well flavored fruit in Colorado, and loses that spongy, tough quality for which it is elsewhere condemned. Then, too, the older fruit growers here are always willing to give freely to new comers the results of their years of experimenting, and are ready to assist the beginner by practical advice that will save him many expensive experiments. Colorado offers health to the invalid, wealth to the industrious, and happiness unalloyed to the overworked and underpaid victims of the commercial and industrial grind in the East, who will come and breathe the pure ozone of her atmosphere and work in the perennial sunshine that bathes her hills and valleys in joyous abundance.

P. A. LEMAN, Conejos Co., Col.

French Shepherds on Stilts.

On the barren, sandy "Landes" in the south of France, the sheep and pigs do not live in clover, nor does the shepherd fare luxuriously. The people are full of queer notions. They assert that potatoes cause apoplexy, that milk is unhealthy, that wheat bread spoils the stomach, and that onions, garlic and rye bread a week old, in their country, is the best and most healthy diet. The shepherds walk on stilts, eat on stilts, and if they do not sleep on stilts, they rest on stilts for hours



LANDES SHEPHERDS AND THEIR FLOCKS.

together by means of a stilt rest. This is a long, stilt-like stick, having a crescentic curve at the top to fit the back. Thus with the stilts stretched out to right and left, and this stick in the rear, they are well braced. The stilt-walkers manage to go through the deep and shifting sands at the rate of six or seven miles an hour. The dress of the shepherd is rough and quaint. He wears a sheepskin with the wool on, in form of a loose hooded coat.

A. S. ERICUS, Landes, France.

The Californian Thistle in New Zealand.

The Agricultural Department of New Zealand has deemed it time to take some steps with a view to checking the spread of the Californian thistle, which is here a noxious weed, becoming so prevalent throughout the colony. They have offered a bonus of $1,250 for the best means of eradicating this weed. Here is a chance for the scientists. Practical men will tell us that there is but one remedy, and that is to treat it so as to prevent the development of leaves, by which means the plant is killed out. The cheapest and most effectual method of accomplishing its destruction is the kind of information required, and such is worth paying for.

WM. HAM, New Zealand.

Southern Pea Weevil. — Subscriber, Mobile, Ala.: The small weevils infesting your cow peas are not the same species as the pea bug or pea weevil, *Bruchus pisi*, which are so destructive to the field and garden peas of our Northern States, but it is one known to entomologists as *B. scutellaris*. This weevil is supposed to be a native of Southern Europe, but has been known for many years in the Southern States, for we have frequently received specimens from Florida and other localities along the Gulf. It is only about one-half the size of the old or common pea weevil, but it is very similar in its habits, and equally difficult to exterminate.

Insects on Elm Trees.— Geo. W. Banks, Westchester Co., N. Y., wants to know how to prevent the "Elm caterpillars" getting upon the trees, and whether the putting of some kind of bands around the stems would prevent their crawling up the stems. The larva of the elm tree beetle is not a caterpillar, but a small grub, which cuts out the soft green parts of the leaves, and by midsummer the trees look as though they had been scorched by fire. These grubs do not crawl up the stems of the trees because the eggs from which they are hatched are laid on the leaves by the parent beetles. The grubs, when fully grown, crawl down the stems to the ground, where they transform first to pupæ, and then to winged beetles. Spraying the trees with arsenical poisons will kill the grubs, but this is very difficult on large trees. We doubt very much if you can save the trees by the use of any kind of insecticide, at least without expending more upon them than they are worth. Unless some parasitic enemy of this pest soon appears, the elm trees in our streets and parks must go.

What is a Ration?—The term "ration," as applied to a mixed feed for cows, does not mean merely a single article that is fed, as it is sometimes erroneously used, nor is it properly applied to a single portion of feed for the animal. The term is evidently taken from military parlance where it means all the different kinds of food issued to the soldiers for a single day of twenty-four hours as rations for one, two or more days. Sometimes the terms "hay ration," "grain ration," or "silage ration," are used, but these are misleading. It should be "portion" of hay, grain or silage. When new words come into use, or old terms are applied to new uses, as in this case, if writers use them erroneously they soon make trouble in their application.

Liming Land.—G. N. Day, Tucker Co., W. Va.: An occasional application of lime to your reddish, sandy soil will no doubt prove very beneficial, but it will be well to keep in mind the fact that lime of itself is not a manure, although nearly all cultivated plants contain some traces of it in their ash, while a few like wheat, oats and barley will not thrive on soils deficient in lime. Lime usually exists in all fertile soils in sufficient quantities to supply the lime required for the formation of the ashy parts of plants, and all that is applied beyond these requirements can only be beneficial as solvents or improve the mechanical condition of the soil. No amount of lime will ever make a poor soil rich, but when applied as a solvent of the vegetable and mineral consituents already in the soil, the results are often so beneficial that the farmer is inclined to consider the lime a valuable fertilizer. The number of bushels required per acre may vary from ten to fifty, the more vegetable matter in the soil, whether in the form of barnyard manure, leaves, leaf mold or muck, the more lime one can use with safety and profit. But continuous liming of land without manure or its equivalent in vegetable matter, is certain to end in a barren soil.

Snail Farming.—H. N. Savage, Carroll Co., N. H.: There is such an industry as "snail farming," and it is a very old one, having been carried on quite extensively by the Romans, who esteemed these mollusks so highly that they kept them in enclosures called *cochlearia*, and fed them on meal and the most delicate vegetables. The common snail is edible, but that most highly prized in European countries and reared for the table on the snail farm is known as the edible snail (*Helix pomatia*). It has a shell about two inches in diameter and the same in height, whitish or pale tawny color, with four darker bones, but these are not always distinct. These snails are largely bred in Switzerland, France and, to a limited extent, in the south of England, where this species has run wild—as we may say—and become acclimated. Snails are sometimes exported from Europe to this country, and there may be snail farms here, but we have never heard of any. There is no difficulty in raising snails in a moist climate where they are provided with shelter and plenty of green herbage to feed upon, then finishing the fattening with fine corn meal.

Selling Live or Dressed Pigs.—C. Brand, Knox Co., Ind.: The surroundings of each farmer must govern his methods, but when there is a packer or butcher to sell to, it is usually better to carry the pigs to market alive than dead and dressed. That is, he will usually get more money for them. Pigs dress from seventy-two to eighty per cent. of their live weight. If the pig is in thin condition multiply the price offered by one hundred and divide the product by seventy-two, and the result will be the dressed weight price. If it is very fat, multiply by eighty, or an intermediate figure, according to the condition of the pig. The chances are that the farmer will get less money for the pig if dressed at the farm, because the packer prefers to kill when he is ready and make a uniform job of all he handles.

How to Prevent Smut in Wheat.—C. M. Hartwick, Grand Forks, N. Dak., writes us: In view of the considerable prevalence of smut in wheat last year, I give you the experience of forty-five years of a well-to-do and prosperous farmer: "Since coming to North Dakota I have learned that smut can be prevented by mixing lime with dry wheat. Lime will kill smut in wheat, and it is much less labor to use it than sulphate of copper. It is not necessary to wet the grain. The lime will adhere to the grain, and if the soil is wet enough for wheat to grow it will wet the lime. Eight years ago my wheat was quite smutty. I prepared it for sowing as herein described, and have had no trouble with smut since. My neighbors have tried the same preventive, with equal success. Spread the wheat five or six inches deep on the barn floor. Sprinkle over it about four quarts for each ten bushels of grain of fresh slaked lime. Shovel it over two, three or four times, until every grain is covered with the lime.

Lawn Grasses.—W. Wilmot, Essex Co., N. J.: The best grasses for hay are not always, and, we might say, are seldom the best for lawns, because for the latter we want a species that forms a close, fine carpet of leaves, and these fine, soft and slender. A grass that grows in bunches like the common orchard grass will not answer—neither those species which have bulbous crowns, like timothy, for close and frequent cutting, as practiced with lawns, will soon destroy a grass with a contracted and limited root system. Kentucky blue grass, Red top, or Rhode Island bent, are excellent lawn grasses, provided the soil is moderately wet and moist. But on light, sandy soils, or on hard, dry clay, there are other species preferable to the above; consequently, to make a selection of grasses for a lawn, one should know in advance something of the nature of the soil on which the seed is to be sown.

Bitter Milk. — L. P. Hubbard, Fairfield Co., Conn., is troubled this year, as he has been in previous years, with one cow's milk growing bitter after a few hours, and the time growing shorter and shorter. The cow will come in early in May. This trouble is not common with cows, though we hear more or less of it every year, especially in the fall. It is often thought to be caused by a weed either in the pasture or the hay. The probability is that the trouble comes from an undetected bacillus. Clean the cow's udder thoroughly and tie her in a clean yard, then wash the hands and scald a tin cup thoroughly. Milk the cow directly into that cup and set the cup in a different room from the one the milk is kept in, and see if that milk becomes bitter. If it does not, then the trouble is in your milking utensils, or the room where the milk is kept. If the milk in the tin cup grows bitter, then it is in the cow's feed. Make a radical change and see if the bitterness does not cease. There is probably nothing the matter with the cow. Try sending her to another farm for a week for new surroundings.

Hard Pine Shingles.—I. T. McLain, Morrow Co., Ohio: The two pieces of shingle you send are both of the same species of pine, and probably of the Northern pitch pine (*Pinus rigida*), which has hard, firm, and yellowish wood, quite different from the common white pine. These shingles will probably last longer than those made from the white pine, although they are far more likely to check when exposed to the weather on a roof. Shaved shingles cost more than those cut out with a saw, but they are worth more because they will last much longer. But the tendency of many in these times is all for the present, letting the future take care of itself.

Smoothing Wounds on Roots.—F. Elias, Ocean Co., N. J.: In digging up trees for transplanting, the spade severing the larger roots usually leaves a very rough surface to the wounds, in fact, the roots are more likely to be crushed and broken instead of being cut off smooth. To insure a clean, healthy surface from which new rootlets may issue in due time, we recommend the smoothing off of the ends of all such broken roots, and with a sharp knife or pair of shears. It is only a moment's work and the roots will be the better for it, and frequently it prevents canker and decay, especially with stone fruits, such as the peach, cherry and plum. Trees taken up in the fall and heeled in for the winter should be very carefully examined when taken out for planting in the spring, and all dead roots cut back to the sound parts, and the blackened wounds shaved or smoothed off until they look bright and fresh.

Salt as an Insecticide. — Charles A. Beyers, Franklin Co., N. Y.: If you should apply salt enough per acre to kill all the worms and grubs in the ground, you would, at the same time, kill all the weeds and grass, and leave the land barren of vegetation. You may apply six to eight hundred pounds of salt per acre, sown broadcast in spring before sowing grain or planting potatoes, corn, and similar crops, and perhaps with benefit, but otherwise salt should be used with caution on land occupied by any kind of crop. It is a stimulant applied in small quantities, as well as an absorbent of moisture from the atmosphere, but it cannot be employed as an insecticide for pests buried deeply in the soil. Your strawberry beds should be kept clear of weeds, and the vines thinned out, if they are crowded. This is about all the care they will require this season, but it would be well to set out new beds this spring for bearing next year.

Carolina Poplar.—D. Ferguson, Essex Co., N. J.: The Carolina poplar is certainly a very rapid growing and handsome tree, but if you think that it has no insect enemies, you have not been very observing, or have been misinformed. In the Western States the foliage is often destroyed by a small beetle belonging to the same family as the now common imported elm leaf beetle. But the most destructive enemy of not only this but all species of the poplar, is a large borer, which cuts through the stems and larger branches, soon killing even the largest and most vigorous trees. This borer is the larva of one of our large, long-horned beetles, the *Saperda calcarata*, and it belongs to the same genus as the common round-headed apple tree borer, but is a much larger insect. It has nearly annihilated the old Lombardy poplars of the Eastern States, and can now be found more or less abundant on other species.

Raising Calves Without Milk.—H. B. Meredith, Marion Co., W. Va.: It is no easy task to keep young calves in good growing order without a milk diet. It can be done, however. First give the calf a good seven days' start on its mother's milk. Then put it into a warm, dry stall and keep it dry. Mix one-half skim milk with whole milk for a week longer, gradually increasing the proportion of skim milk. Feed all milk warmed to 95 degrees. At the end of two weeks substitute hay tea, made by boiling chopped clover hay, for the skim milk, and add one or two tablespoonfuls of cotton seed oil to the gallon of hay tea, and gradually lessen the skim milk and give a double handful of whole oats for the calf to pick at. You

must use judgment in feeding a calf, and vary the amount of each kind of food as the calf seems to thrive on it. Feed everything of a liquid nature warm and often.

Roots for Dairy Cows.—A. H. Morrison, Snohomish Co., Wash., wishes to know the best mangel and carrot for dairy cows. The two most popular mangels are the Long Red and Yellow Globe. The greater preference is given to the Long Red as being easier to harvest and to cut for the cattle. In carrots the Long Orange, the Belgian and Altringham are most suitable for field culture. Roots are quite expensive to raise and should be planted with a view to horse culture, that is, far enough apart to use horse cultivators. The ground should be rich and mellow. Root cultivation is becoming partly superseded by the use of the silo, which is so much easier to manage and cheaper, furnishing a food but little inferior to roots, and at probably one-fourth of the cost of the latter.

Sterilizing and Pasteurizing Milk.—Tyler A. Williams, Bexar Co., Tex.: The whole process of sterilizing milk is to heat it to a degree high enough to kill all the germs of living things in it. Pasteurizing is killing, by several heatings, the growing bacteria, which die at a lower temperature. If milk be heated to 155 degrees F. and held at that temperature for a few minutes and then cooled immediately, not slowly, enough of the injurious germs will be killed for all practical purposes. The milk should be put in a tin can with something on the bottom to keep the can from coming directly in contact with the stove heat. Then put it in a pot of water to the full height of the milk. Keep it well stirred, and when the temperature rises to between 155 and 165 degrees take the milk and water off the stove and allow the milk to stay in the water five or ten minutes, then take it out and cool it to 60 degrees with ice or cold water.

Preventing Cows from Jumping Fences.—J. D. Hughes, Hillsdale Co., Mich.: Cows often get into bad habits when young, and unless they are very valuable are hardly worth trying to reform them when old. The best, quickest and most radical remedy is to saw off the horns of breachy cows. This, according to a volume of testimony from those who have tried it, is a sure cure for bad temper and mischievousness. Pokes and boards over the eyes do not always stay where they are wanted, and tying the head down to the front foot is cruel, but in bad cases they must be applied. The farmer should educate himself and his cows above jumping fences by having better fences—barbed wire, if necessary—and better feeding.

Using the Tedder.—C. E. Stafford, Tolland Co., Conn.: In a moist climate, where the hay crop is of a heavy growth, the layer next the ground cures badly, unless it be turned over after being cut. When the growth is clover it is quite impossible to get in a proper condition for raking up without first tossing it up, and this can be done in no way so quickly and cheaply as by the use of a tedder. To expedite the process, the tedder should follow the mowing machine in at least three hours, and if the day be windy and warm, two hours is none too soon. If the day be cloudy with a good breeze, one is able to make a better quality of hay than on a still, hot, sultry day. The hay may have to stand a half day longer in the cock, but it will be of a more desirable color, and be better relished by stock. If you have no tedder, fork over the heaviest portions by hand, especially at the corners, and rake up early in the day, letting it lie in the windrow for two or three hours, and much of the moisture will be evaporated. It is best to run the horse rake around the field in the same direction that it was mowed.

Painting Roofs.—V. L. Singer, Camden Co., N. J.: The painting of metal roofs is a necessity, and will remain so until a metal is found that will not corrode when exposed to the elements. It is possible that when aluminum is produced cheap enough it may be used for roofing purposes. It has the requisites in non-corrosiveness, strength and lightness. Flat metal roofs should be painted every five years, and if situated where moisture is slowly evaporated, as in the shade or on the north side of a building, a coat of paint every three or four years will prove none too frequent. As soon as the metal is exposed, corrosion takes place, and it requires but a few years of neglect to eat a hole through the metal, and the expense of repairing the aperture would be more than the cost of painting many squares. Do not allow any one to walk over a flat tin roof when wearing heavy boots with the nails projecting even a trifle below the soles or heels. This not only removes the paint, but indents the tin, often puncturing it. The practice of painting shingled roofs is not a commendable one, and unless the work is done by an expert, and the shingles are of a strictly uniform quality, in a few years the roof presents a streaked, spotted appearance, The prime object in painting shingled roofs is to add to the appearance of the structure, but unless the practice is kept up and done timely, it detracts rather than adds to the appearance.

Removing Moss from Roofs.—N. R. Truman, Floyd Co., Va.: Many old shingled roofs are at some point covered with moss, moist and shaded places being most favorable to its free growth. Hence, it is found mostly on roofs, or portions of roofs, shaded by trees, or by some higher adjoining structure. This growth is very detrimental to any wood to which it may be attached as it holds the moisture, causing decay; not only is the portion of roof thus covered with moss kept damp, but the dampness is extended to the room below, not only rendering it unhealthy, but often causing the plastering and wall paper to become loosened. By removing the cause, letting in the direct rays of the sun, the trouble will be abated, but this does not and will not restore the shingles to their normal condition. To remove the moss and prevent its growth, scrape it off with a hoe, or other tool, then drench the roof with lye, or strong lime water. This destroys the moss and prevents its growth for several years thereafter. If the old roof is to be renewed for reshingling, apply a coating of oil, either boiled or raw linseed, or crude petroleum. Even kerosene will prove sufficient to prevent the moss getting a foothold, and at the same time act as a preservative.

Six Good Strawberries.—S. S. B., Lancaster Co., Pa.: Michel's Early, Haverland, Warfield, Bubach, Lovett's Early and Parker Earle would make a good list of six varieties of strawberries for general culture. These have all been thoroughly tested. Among the newer sorts we consider Timbrell as being very promising, also Brandywine.

Grafting Pear Trees.—Reader, Tompkins Co., N. Y.: Pears may be grafted successfully any time between the first of April and the middle of May. A good recipe for grafting wax is one pound of resin, one-half pound of beeswax, and one-fourth pound of tallow, melted together, and when thoroughly mixed, poured on water and worked as one would work molasses candy. A liquid wax is made of one pound of white resin and one ounce of beef tallow. When melted together remove from fire and add eight ounces of alcohol. Keep in a closed bottle or can.

Good Ration for Dairy Cows.—Dairyman, Bloomington, Ill.: A balanced ration for the dairy cow should contain about one part protein to five and one-half carbohydrates. In arranging for ration from the analyses as usually published, you must add the fat multiplied by two and one-half to the carbohydrates, calling it all carbohydrates, of which you should have about five and one-half parts to one of the albuminoid, proteid or nitrogenous side of the ration. Wheat bran contains 13.6 of digestible protein and is an admirable factor in preparing a good ration.

White Spots and Streaks in Butter.—Observer, Logan, Iowa, writes us: The white spots or streaks found so often in butter are neither salt nor curds. There is no more affinity between salt or curds and butter than there is between oil and water. You may occasionally find a lump of salt or a small flake of casein in butter, but not enough of either to make any more than a speck, and if allowed to escape will do so. The only cause of this trouble is overheat, which destroys the life, grain and flavor of the butter, and explains why dealers do not like it, although they may not be able to state why. If after the cream is skimmed it is not properly held so that it will fully mature, the globule is not full, and some artificial means must be used to expand it and to bring about the result which Nature intended to do herself. This is usually done by placing the cream can by the stove and warming it to the desired temperature, or by pouring warm water in the churn. In either case the part of the cream on the outside nearest the stove, or that the hot water strikes first, is killed or partially destroyed and will make white butter, and if all of it had been subjected to the same degree of heat, it would have all been alike. With proper appliances the cream may be held to avoid this, and at the same time get rid of the lactic acid, which is the destroyer of butter material.

An Effective Insecticide.—H.C. D., Dutchess Co., N. Y.: The ammoniacal copper carbonate preparation is prepared as follows: One ounce copper carbonate, ammonia enough to dissolve the carbonate, and then dilute with nine gallons of water. The best plan is to dissolve the carbonate in the ammonia in a large bottle, which, if kept in a cool place, will keep as long as may be desired. When wanted for use, take what is needed, add the proper proportion of water, and it is ready. It is very effective in the late treatment of grape rot, used at intervals during the season.

Preserving Eggs.—A. H. Keane, London, England, writes us that a trial shipment of eggs from Victoria, made by the Honorable J. H. Conner, was quite recently inspected by an officer from the department of the Agent-General for Victoria in London. With regard to the packing of the eggs they had, in the first place, been rubbed over with grease, and afterwards placed with bran, flour, lime and meal in small cases. This method of packing has proved itself to be a decided success, for when the cases were opened, the eggs were found to be perfectly fresh and sweet, while there was an entire absence of all musty effluvia, or of sweating.

Painting or Papering Walls.—H. B. Brutus, Emmet Co., Mich.: For farm houses and cottages, where the housewife, of necessity, spends at least half her waking hours in the kitchen, there is a question whether it is best to paper or paint the walls and ceiling of the kitchen. Both have their advocates, and there is no question but the sentiment in favor of painting is growing stronger year by year. On nearly all farms the kitchen is the room in which the weekly washing is done. This, of necessity, fills the room with moist vapor that dampens, and, as a natural consequence, deadens the paper, eventually loosening it in places, with the attendant bad results. During the heat of summer, unless the doors and windows are closely guarded, flies become occupants of the kitchen, and the paper becomes spotted beyond any possibility of renovating. Grease spots, and other spatter stains, are unavoidable, and nothing but repapering obliterates them. If the walls were painted, nearly all of these troubles are quickly removed by the application of a dampened cloth, sometimes requiring the addition of a little soap. As to the color of paint, tastes differ. A light drab, brown or slate are desirable. Do not use white, and a paint with a gloss is better than varnish; yet after use has dimmed the gloss, varnish should be applied.

Cultivating Orchards.—J. R. Welch, Knox Co., Ohio: By all means cultivate the soil about the fruit trees, whether they have been recently set or are in full bearing. Apple trees that are set forty feet apart can have hoed crops raised between the rows for eight or ten years after being set, providing the fertility of the soil is maintained, or rather increased, by the yearly application of commercial, or homemade fertilizers. The yearly growth of trees takes considerable fertility from the soil, the older the trees, the greater the amount required, and with heavy crops of fruit the drain is still greater and the loss of fertility should be made up in some manner, either by direct application or the growth of clover or peas to be plowed under. Many orchards are left in grass for several years. It is thus more pleasant to gather the crops, and the standard fruits which fall are not usually so badly bruised. When in sod, pasturing is far preferable to mowing. The fallen fruit is then eaten by the stock. But the sod affords a breeding place for insects. The most successful fruit growers are those who practice cultivation until the tree comes into bearing, and then do not allow the land to remain in sod more than one year at a time. Of late years the prevalence of insects, fungous and other diseases and pests has made it quite necessary to give the fruit tree as much observation as the stock at pasture.

OUR LIBRARY CORNER.

A New and Useful Book.

FUNGI AND FUNGICIDES. A Practical Manual Concerning the Fungous Diseases of Cultivated Plants and the Means of Preventing their Ravages. By Clarence M. Weed, D. S. C., Professor of Horticulture at the New Hampshire Agricultural College. New York: The Orange Judd Company. 222 pp., 90 illus., 12mo., cloth.

Who has not suffered great loss from the attacks of the various smuts, blights, rots, etc., that affect their crops? These are common names of the principal classes of fungous diseases. Until within a few years no practical remedy has been known for most of them. Progress in combating them has been especially marked between 1890 and 1894, until now the development of the various fungi on our crops is well understood, while simple and thoroughly practical means of preventing their ravages have been perfected. This information, however, is now widely scattered through scores of periodicals, bulletins, reports and transactions, and the subject is so new that not one farmer or fruit grower in a hundred is informed as to just the course to pursue in dealing with these pests. In this practical manual, however, Professor Weed has brought together in easily accessible form the essential facts concerning the injuries, life histories, characteristics and preventives of fungous diseases. The book describes, in simple but accurate terms, that any one can understand, what fungi are, and shows how they are propagated and destroyed. Formulas are given for every mixture the application of which, by spraying or otherwise, has proved helpful, and exact directions are furnished for applying these fungicides, either alone or in combination with insecticides.

The body of the work is divided into five divisions, each of which illustrates and describes the fungous diseases pertaining to the plants in that division, and gives the proper treatment for these diseases, so that their ravages may be prevented with but little labor and slight expense. Part I. treats on fungi affecting the larger fruits—the apple, pear, quince, plum, cherry and peach, and considers all forms of smut, mildew, rots, rusts, leaf and twig blights, fruit spots, black knot, yellows, etc., with which they are affected. Part II. considers fungi affecting small fruits—the grape, currant, gooseberry, raspberry and blackberry, and strawberry. The chapter describing the black rot of the grape and giving directions for preventing its ravages, is alone worth many times the cost of the book to every vineyardist. Part III. considers fungi affecting shade trees, ornamental plants and flowers. Part IV. treats on fungi affecting vegetables, such as the bean, beet, cabbage, celery, onion, cucumber and melon, potato, sweet potato, spinach, tomato, etc. While each of these is fully considered, the chapter on onion smut and potato blight is particularly valuable. The real cause of potato scab is described and the cure for it given. In Part V., fungi affecting cereals and forage crops are treated, including oats, wheat, Indian corn, sorghum and broom corn, alfalfa and clover. In preparing this book free use has been made of all accessible writings and experience upon the subject, so that between its covers may be found a comprehensive digest of all that is known on the subject. If farmers and fruit growers would make use of this indispensable manual, and combat the fungous diseases of their crops by the methods that have proven successful, which the book describes, it would add materially to their profits. A most excellent feature of the book is the references to the literature on each of the various fungi. The work is copiously illustrated with nearly 100 original illustrations true to life. This new book is now in press and will be ready for delivery early in May. Sold by the Orange Judd Co. Price, postpaid, $1.

INJURIOUS INSECTS AND THE USE OF INSECTICIDES. A New Descriptive Manual of Noxious Insects, with Methods for their Repression. By Frank W. Sempers, Director of Fordhook Chemical Laboratory. Philadelphia: W. Atlee Burpee & Co. 1894. 216 pp., il., 12mo., paper.

In this volume no attempt is made to teach the science of entomology. In a work of such limited dimensions only the more common and more destructive injurious insects could be considered, and, necessarily, descriptions have been confined to a concise summary of characteristics, and especially to those salient points in form, habits, and life history, which may be serviceable in identifying destructive species, and in counteracting their injuries. This manual is eminently practical and useful. Sold by Orange Judd Company, New York. Price, postpaid, 50 cents.

THE PAINTER, GILDER AND VARNISHER'S COMPANION. Comprising the Manufacture and Test of Pigments, the Arts of Painting, Graining, Marbling, Staining, Sign Writing, Varnishing, Glass Staining and Gilding on Glass; together with Coach Painting and Varnishing, and the Principles of Harmony and Contrast of Colors. Twenty-Seventh Edition. Revised, enlarged and in great part re-written. By William T. Brannt, Editor of "Varnishes and Lacquers, Printing Inks and Sealing Waxes." Philadelphia: Henry Carey, Baird & Co. 1894. 395 pp., il., 12 mo., cloth.

The long continued reputation and popularity of this standard treatise has made necessary the issue of the twenty-seventh edition. The book has been thoroughly revised and entirely reconstructed, a very considerable amount of new matter added, and old matter eliminated to bring the work up to date, and make it still more useful to the reader. The many farmers who keep their houses and implements in good repair by their own handiwork will find in this volume many useful hints. Sold by Orange Judd Company, New York. Price, postpaid, $1.50.

INJURIOUS AND OTHER INSECTS OF THE STATE OF NEW YORK. Seventh, Eighth and Ninth Annual Reports of the State Entomologist, J. A. Lintner, Ph. D. Albany, N. Y. About 400 pp. each, il., 8vo., cloth.

The reports of the New York State Entomologist are exceedingly valuable to the farmers, not only of the Atlantic States, but of the whole country as well. As New York City is the commercial center of America, insects are brought by ship and rail from all parts of the world, and are sent to Dr. Lintner for identification. Many of them prove to be pests of the farm in this and other climates, and the descriptions of the insects and the directions for combating them are clearly described in these volumes. The reports are fully illustrated, clearly printed, and substantially bound.

GRASSES AND FORAGE PLANTS FOR ARID REGIONS. By B. C. Buffum, Professor of Horticulture, University of Wyoming. Being Bulletin Number 16 of the Wyoming Agricultural Experiment Station at Laramie, Wy. 1894. Pp. 221-248, 8vo., paper.

This monograph contains the outcome of experiments with both domesticated and indigenous grasses on the high table lands of the Rocky Mountains. The trials were made both with and without irrigation, the latter being carried on in the United States Grass Station connected with the Wyoming Agricultural College. The most useful, wild and tame grasses under such conditions are described, and a catalogue of grasses growing in dry climates is given.

FARMING WITH GREEN MANURES ON PLUMGROVE FARM. By C. Harlan, M. D., Wilmington, Del. Fifth Edition. Revised and Enlarged. Published by the Author. 1894. 269 pp., 12mo., cloth.

The subject of green manuring is of much importance to every farmer, and in this volume will be found many practical hints and directions. The discovery that leguminous plants absorb and fix the free nitrogen of the air adds greatly to the reasons for plowing under green crops as fertilizers. Sold by Orange Judd Company, New York. Price, postpaid, $1.

CAPONS FOR PROFIT. How to Make and How to Manage Them. Plain Instructions given by a Beginner for the Beginner. Illustrated. By T. Greiner, 1894. 50 pp., il. 12mo., paper.

The capon industry is an important one, and this book gives full and plain instructions for caponizing fowls. The author believes that it is easier to castrate a young cockerel than a pig or a lamb, and the capons live to eat and grow and become fat. They do not run, or chase, or fight. The many good pictures clearly illustrate the process. Sold by Orange Judd Company, New York. Price, postpaid, thirty cents.

SPRAYING CALENDARS FOR 1894. Being Poster Bulletins No. 1 and No. 2 of the Michigan Experiment Station. By the Horticulturist, L. R. Taft, Agricultural College P. O., Michigan.

These spraying calendars are not only ornamental, but are also exceedingly useful. Hung upon the wall, the farmer or gardener has constantly before him condensed but complete direction for using fungicides and insecticides. The large cards make reference easy, and as the spraying formulas are given, and directions for each application, even up to the sixth, but little more could be desired. Prof. Taft credits the original card spraying calendar to one prepared by Prof. E. G. Lodeman, of Cornell University, for a manufacturer of spraying machinery.

WEEKLY MARKET LETTERS. Valuable information of Leading American Exchanges. 1893. By Clapp & Company, Bankers, New York. 1894. 328 pp., il., quarto, cloth.

The weekly market letters of the New York firm of Clapp & Co. are here reproduced by the use of photography and electrotyping, and are bound in one elegant volume. The contents comprise estimates of the quantity and Government values of nearly all American products, grown, mined or fished, also their export values; prices daily at speculative centers, like Chicago and New York; storage capacity, rates and who controls inspection at grain centers; where England buys food products yearly, the world's crops, and much other useful matter.

Other Publications.

MISCELLANEOUS WORKS.

BILTMORE FOREST. Near Asheville, North Carolina. The Property of George W. Vanderbilt, Gramercy Park, New York. An account of its Treatment and the Results of the First Year's Work. By Gifford Pinchot, Consulting Foresters. Chicago. 1893. Illustrated pamphlet.

ALL ABOUT SWEET PEAS. A Complete Epitome of the Literature of this Fragrant Annual. By Rev. W. T. Hutchins. Revised and Enlarged. Philadelphia: W. Atlee Burpee & Co., 1894. 131 pp., il., 32 mo.; paper. Sold by Orange Judd Company, New York. Price, postpaid, 20 cents.

SCIENCE IN THE STABLE; Or, How a Horse Can be Kept in Perfect Health and be Used Without Shoes, in Harness or Under the Saddle, with the Reasons Why. By Jacob R. Ludlow, M. D., late Staff Surgeon U. S. Army. Sold by E. D. Vogel, Easton, Penn.

RECENT PROGRESS IN DAIRYING. By Prof. G. E. Patrick, State Agricultural College, at Ames, Iowa. Reprinted from Annual Report of the Nebraska Dairymen's Association. Pamphlet.

NEW JERSEY STATE HORTICULTURAL SOCIETY. Proceedings of the Nineteenth Annual Session. H. I. Budd, Secretary, Mount Holly, N. J. 204 pp., 8vo.; paper.

ONTARIO AGRICULTURAL COLLEGE AND EXPERIMENT FARM. Nineteenth Annual Report, with Fifteenth Annual Report of the Agricultural and Experimental Union. Guelph, Canada. 303 pp., il., 8vo.; paper.

PENNSYLVANIA HORTICULTURAL SOCIETY. Premium List for 1894. Secretary D. D. L. Farson, Philadelphia. Pamphlet.

NORTH DAKOTA. Special Report of the Commissioner of Agriculture and Labor. By Nelson Williams, Commissioner, Bismarck, N. D. Pamphlet.

CALIFORNIA STATE BOARD OF TRADE. Annual Report of the Industrial Resources of the State. By N. P. Chipman, San Francisco. Pamphlet.

WESTERN NEW YORK HORTICULTURAL SOCIETY. Proceedings of the Thirty-Ninth Annual Meeting. Secretary John Hall, Rochester, N. Y. 167 pp., 8vo.; paper.

COLONIAL HOUSES FOR MODERN HOMES. E. S. Childs, Architect, 62 New Street, New York. Folio. Plans. $2.

INDIA. The Indian Textile Journal Directory of Indian Manufactories, 1894. Edited by John Wallace, C. E. Compiled by Sorabji M. Rutnagur, Bombay, India: M. C. Rutnagur & Co. Folio. Boards. Seven Shillings.

CYCLE-INFANTRY DRILL REGULATIONS. Prepared by Brig. Gen. Albert Ordway. Adopted March 25th, 1892. Boston: Pope Manufacturing Co. 70 pp., il., 32mo., cloth.

STATISTICAL ABSTRACT OF THE U. S. 1893. Sixteenth Number. Bureau of Statistics. Treasury Department, Washington, D. C. 1894. 400 pp., 8vo., paper.

UNITED STATES COMMISSIONER OF LABOR. Fourth Special Report. Compulsory Insurance in Germany. Prepared under the Direction of Carroll

OUR LIBRARY CORNER.

D. Wright. By John Graham Brooks. Washington, D. C.: Government. 370 pp., 8vo., cloth.

MINERAL RESOURCES OF THE U. S. By David T. Day, Chief of Division of Mining Statistics and Technology. U. S. Geological Survey. Department of the Interior, Washington, D. C. 1893. 850 pp., 8vo., cloth.

PENNSYLVANIA STATE COLLEGE. Report for 1892. State College, Penn. 1893. 231 pp., il., 8vo., cloth.

UNITED STATES. Reports of the Secretary of the Interior. 1890-1892. Irrigation in America. Topographical Survey. Washington, D. C.: Government. Folio. Cloth.

COMMERCE AND NAVIGATION OF THE U. S. 1893. Prepared by the Chief of the Bureau of Statistics, Washington, D. C. 1894. 670 pp. Folio. Cloth.

BUREAU OF ANIMAL INDUSTRY. U. S. Department of Agriculture. Eighth and Ninth Annual Reports. Lumpy Jaw, Southern Cattle Fever, etc. Washington, D. C. 1893. 428 pp., il., 8vo., cloth.

MICHIGAN BOARD OF AGRICULTURE. Thirty-First Annual Report. Henry G. Reynolds, Secretary, Agricultural College, Mich. 607 pp., il., 8vo., cloth.

UNITED STATES GOVERNMENT PUBLICATIONS.

UNITED STATES DEPARTMENT OF AGRICULTURE, Washington, D. C., publishes the following:

FERTILIZERS FOR COTTON. By J. M. McBryde. (Farmers' Bulletin No. 14.)

PROCEEDINGS OF THE MINNESOTA GOOD ROADS CONVENTION at St. Paul, Minn., 1894. (Bulletin No. 2, Office of Road Inquiry.)

EXPERIMENTS WITH SUGAR BEETS IN 1893. By H. W. Wiley and Walter Maxwell. (Bulletin No. 39, Division of Chemistry.)

REPORT OF THE STATISTICIAN. (New Series, Report No. 113.) Estimates in condensed form of the distribution and consumption of wheat and corn, and the amounts remaining in the hands of the producers in the several States on March 1, also statistics by countries of the wheat crop of the world for the years 1891, 1892 and 1893.

EXPERIMENT STATION RECORD, Vol. V, No. 6. Pp. 547-666: Articles on the German Agricultural Society and Agricultural Experiment Stations in Belgium. Abstracts of the publications of the agricultural experiment stations and of the U. S. Department of Agriculture; abstracts of reports of foreign investigations; titles of articles in recent foreign publications; etc.

EXPERIMENT STATION RECORD, Vol. V, No. 7. Pp. 667-744: Editorial notes on the contemplated seed collection of the Department, and on corn and soja bean silage; article on Experiment Stations in Holland; abstracts of the publications of the agricultural experiment stations and of the U. S. Department of Agriculture; abstracts of reports of foreign investigations; titles of articles in recent foreign publications; etc.

ORGANIZATION LISTS of the Agricultural Experiment Stations and Agricultural Schools and Colleges in the United States. (Bulletin No. 19, Office of Experiment Stations.) Gives the legal title and location of each of the agricultural schools and experiment stations in the United States, the names of all officers connected therewith, and the federal legislation, post-office regulations, and Treasury rulings affecting such schools and colleges.

REPORT OF THE INTERNATIONAL METEOROLOGICAL CONGRESS, held at Chicago, Ill., August 21-24, 1893, under the auspices of the Congress Auxiliary of the World's Columbian Exposition. Part 1. (Bulletin No. 11, Weather Bureau.)

CURRENTS OF THE GREAT LAKES, as deduced from the Movements of Bottle Papers during the Seasons of 1892 and 1893. By Mark W. Harrington. 6 pp., charts 6. Size 18½ by 24 inches. (Bulletin B, Weather Bureau.)

CHARTS OF THE WEATHER BUREAU. (Size, 19 by 24 inches.) Semi-daily Weather Map, showing weather conditions throughout the United States and giving forecasts of probable changes. Snow Chart, showing conditions in the United States as regards snow and ice. Weather Crop Bulletin, No. 2 (series of 1894), reporting temperature and rainfall with special reference to effects on crops.

TEXAS FEVER. Map showing the Boundary Line of the District Infected with Splenetic or Southern Fever of Cattle, as defined in the order of the Secretary of Agriculture, February 5, 1894. Size, 17 by 36 inches. (Bureau of Animal Industry.)

AGRICULTURAL EXPERIMENT STATION BULLETINS.

ALABAMA—At Auburn. A new milk or water sterilizer (B. 53). Tobacco (B. 54).

ARIZONA—At Tucson. Insects and insecticides (B. 9). Experiment work at Willcox (B. 10).

ARKANSAS—At Fayetteville. Unsound corn and forage as a cause of disease in live stock; Colic in horses and mules; Some further experiments with Texas cattle fever (B. 25).

COLORADO—At Fort Collins. Sixth annual report.

CONNECTICUT—At New Haven. Seventeenth annual report,—Parts II. and III. At Storrs. Results of experiments with fertilizers on different classes of soils (B. 10). Summary of annual report (B. 11). The ripening of cream by artificial bacteria cultures (B. 12).

DELAWARE—At Newark. Texas fever (B. 23).

IDAHO—At Moscow. The relation of meteorology to the agricultural interests of Idaho (B. 5). Annual report (B. 6).

INDIANA—At Lafayette. Experiments with small fruits (B. 48). Sugar beets (B. 49).

IOWA—At Ames. A study in churning; Composite samples at the creamery; chromate preservatives; Rennet extracts; Sand cherries for stocks; Rose hybrids (B. 22). Soiling; A study of ripening corn; Injurious insects; Crossing cucurbits; Fungous diseases; Sugar Beets; Rainfall record (B. 23).

LOUISIANA—At Baton Rouge. Sixth annual report. Sugar cane (B. 24).

MAINE—At Orono. Waste of fat in skimmed milk by the deep-setting process (B. 5). Fruit culture (B. 6).

MARYLAND—At College Park. Sixth annual report. Composition of commercial fertilizers sold in the State (B. 24). Agricultural and horticultural departments (B. 25).

MASSACHUSETTS—At Amherst. Commercial fertilizers; Analyses of fodder articles (B. 51). Hatch station. Weather (B. 62).

MISSOURI—At Columbia. Soils and fertilizers (B. 19). Seedling strawberries (B. 22).

NEW MEXICO—At Las Cruces. The value of the Rio Grande water for irrigation (B. 12).

NEW YORK—At Geneva. Eleventh annual report. Analyses of commercial fertilizers (B. 66). Experiments in preventing pear scab (B. 67). Investigations relating to the manufacture of cheese, Part V, (B. 68). Cornell University Station at Ithaca. Japanese plums in North America (B. 62). Coöperative test of sugar beets (B. 63).

NORTH CAROLINA—At Raleigh. The fertilizer control (B. 95). Digestion experiments (B. 97). Fertilizer analyses and the fertilizer control (S. B. 17, 18, 19).

NORTH DAKOTA—At Fargo. Transplanting onions (B. 12).

OHIO—At Wooster. Experiments in feeding for milk (B. 50.)

OKLAHOMA—At Stillwater. Water analyses (B. 7). Test of varieties of vegetables (B. 9). American corn (B. 10.)

OREGON—At Corvallis. Plant diseases: Their cause and prevention (B. 27). Continuation of experiments in pig feeding (B. 28).

PENNSYLVANIA—At State College. Annual report.

SOUTH CAROLINA—At Clemson College. Sixth annual financial report. Experiments with Irish potatoes (B. 9). Notes on varieties of beans (B. 10). Analyses of commercial fertilizers (B. 11). Coöperative soil tests of fertilizers (B. 12). Analyses of commercial fertilizers (B. 13). Experiments with maize (B. 14). Fertilizer experiments with American corn (B. 15).

TENNESSEE—At Knoxville. Sixth annual report.

VERMONT—At Burlington. Spraying potatoes (B. 40).

VIRGINIA—At Blacksburg. Grape culture (B. 30). Tests for fertilizers on maize (B. 31).

WEST VIRGINIA—At Morgantown. Fertilizer analyses (B. 34). Defects in wood caused by insects (B. 35). Black holes in wood (B. 36).

WYOMING—At Laramie. Crops for irrigated land. Weather (B. 17).

CANADA—At Ottawa. Tuberculosis (B. 20). At Guelph. Nineteenth annual report.

CATALOGUES ACKNOWLEDGED.

S. L. ALLEN & Co., Philadelphia, Pa. Illustrated and descriptive catalogue of the peerless Planet Jr. tools, comprising seed drills, cultivators, wheel hoes, etc., both for hand and horse power. Any one who tills a garden or farm, large or small, will be interested in the information given in this catalogue.

CHAS. DADANT & SON, Hamilton, Ill. Circular of comb foundation, beehives, bee veils, smokers, extractors, bee books, etc., accompanied with instructions to beginners in bee culture.

I. & J. L. LEONARD, Iona, N. J. Wholesale and retail price list of nursery stock and vegetable plants. Choice nursery stock a specialty.

F. E. MYERS & BRO., Ashland, Ohio. Illustrated and descriptive catalogue of hay tools; also special catalogue of force and lift pumps; also catalogue of spray pump apparatus of the latest improved kinds.

DUANE H. NASH, Millington, N. J. and No. 39 South Canal St., Chicago, Ill. Special circular of the Acme Pulverizing Harrow, clod crusher and leveler, and the Macomber Hand corn, bean, and beet seed planter.

PAGE WOVEN WIRE FENCE CO., Adrian, Mich. The Coiled Spring Hustler—a bright and sparkling sheet devoted to the interest of the famous Page Woven Wire Fencing.

M. A. THAYER, Sparta, Wis. Catalogue of small fruit plants; also pamphlet of Thayer's Berry Bulletin.

U. S. SEED CO., Kalamazoo, Mich. Market gardeners' special wholesale seed list. Special list of celery plants, garden tools, spraying implements, etc.

VILMORIN-ANDRIEUX & CO., Paris, France. Catalogue of grains, trees, shrubs, greenhouse and ornamental plants.

P. A. WEBSTER, Cazenovia, N. Y. Circular of White Indian Game Fowls.

Irrigation in Greenhouses.—For many years heat has been distributed to the plants in greenhouses through pipes, carrying hot air, hot water, or steam, but to pipe the water to the plants is a more recent innovation. Sub-irrigation through pipes of tile, wood, or metal having proven so successful for outdoor gardening in regions where there is a deficiency of rainfall during the growing season, the Ohio agricultural experiment station conceived the idea of sub-irrigating the beds of soil in the greenhouse, instead of sprinkling or flooding the surface. The latter methods keep the surface of the soil too wet for the moist atmosphere of the glass-roofed plant house, bringing the roots to the surface and causing decay and other fungous diseases of the lower leaves. The station experiments at Wooster, by W. J. Green, have been very successful, lettuce especially maturing earlier, and yielding a double crop. The greenhouse benches have water-tight bottoms, with rows of drain tile running through the soil, two feet apart. Director C. E. Thorne writes us that sub-irrigation is destined to revolutionize the culture of plants under glass, giving better results with less labor. Great opportunities for vegetable forcing in midwinter are presented by this method. The gardener will reap more profit, many persons will be employed during the slack winter months, and many vegetables and flowers will be as cheap and abundant in January as they now are in April. The fresh, healthful products of home greenhouses will take the place of stale shipments from distant climes.

Valuable Information in Every Article.—The AMERICAN AGRICULTURIST is getting better every year and no progressive farmer should be without it. I find some valuable information in every article, and some are of more real worth than the price of several years' subscription. I do not wish to be without the paper so long as I am on the farm. M. M. HALLOCK, Merrick Co., Neb.

The Standard Agricultural Paper.—In renewing my subscription, I desire to express my highest opinion of the AMERICAN AGRICULTURIST. I keep every number on file and cannot do without this standard agricultural paper of America.

C. G. THOMPSON, Knox Co., Tenn.

SCIENCE IN FARMING.

Early or Late Irrigation.—When to begin and when to close irrigation is still an open question among irrigators, as early irrigation affects soil temperature as well as soil moisture. Irrigation, when the crop is nearly ripe, also affects the tendency to the production of leaf and stem. Experiments by J. W. Sanborn, at the Utah station (B. 23) indicate that irrigation early in May is not an economical process, as the very early watering increased the yield of wheat and oats, and the ratio of grain to straw, but not the total yield of grain and straw. Irrigation during the first half of July increased the total yield of wheat and oats, and the ratio of grain to straw. It is the usual belief that if a crop be irrigated while the seed is forming there results a tendency to increase the growth of stem and foliage to the detriment of seed development. The best results with grain come from irrigation during June. The results with potatoes, which need but little water, were unfavorable to irrigation before the middle of June or after the middle of July. The best yield of grain was secured where sufficient water was applied to saturate the soil to a depth of eighteen inches (B. 24). The largest yield of grass was secured from the heaviest application of water. Drainage did not appear to result in an increased amount of moisture absorbed from the air. The lateral movement of the water was very small. The water of Logan river furnishes a superabundance of lime, but only a very small per cent. of the potash, nitrogen, and phosphoric acid required by the crops, so that, alone, such water is entirely inadequate to maintain soil fertility. This was also true of the waters of other rivers which were analyzed. Practically all of the plant food applied by the irrigation water, in sufficiency for crops, is retained by the soil, and ordinary irrigation does not leach fertility from the soil.

Fattening Rations for Lambs.—In the Mississippi valley, maize, oats, and wheat bran, either alone, or combined, are the foods most used for fattening sheep. An experiment in fattening 125 Shropshire-Merino lambs at the Michigan station (B. 107) by F. B. Mumford, showed that the lambs receiving American corn in the grain ration, either in whole, or in part, gave the best gains, were apparently in better finish, and in general were fed at a greater profit than the lambs receiving bran or oats. A grain ration of bran proved to be an inferior material for fattening lambs. A ration of corn and oats produced slightly better results than either a mixture of corn and bran, or of corn, oats and bran, all in equal parts by weight. The results indicate that in fattening lambs by means of a self feed, in which the lambs have free access to grain at all times, the resulting gains are produced by a larger consumption of grain to yield one pound of gain, than when fed measured quantities at regular intervals; and, other things being equal, the former gains are less profitable. A mixture of fodder articles, composed of one-third of bran, oats, and hay, and of about two-thirds, by weight, of a good quality of maize silage, proved a cheap and successful ration for fattening lambs. The rate of gain was apparently increased by shearing during the fattening period. In this experiment colder temperatures were quite generally accompanied by increased gains. The amount of available protein in the various rations was apparently a less potent factor in producing gains than the amount of available carbohydrates; hence the fattening value of the corn. These trials showed that small gains are not necessarily unprofitable; nor are large or rapid gains a sure index of profitable food consumption.

Irrigation During Drouths.—Many crops of fruits and vegetables which ripen in early summer are often almost completely ruined by drouths. J. Troop, of the Indiana station, demonstrates (B. 48) the necessity of adopting some means of regulating the supply of water furnished to growing fruits and vegetables, wherever this can be done without too great expense. Fruits, especially, require a large amount of water during the ripening period to enable them to develop properly, and experience has shown that it is not safe to rely entirely on the rainfall for the needed moisture. Some small-fruit growers are very profitably using artificial irrigation during the dry spells. The amount of water required depends upon the soil and the kind of crops. In a rainfall climate the chief value of irrigation comes from the fact that the farmer or gardener is able to supplement the natural rainfall, thus supplying the moisture just when it is most needed. The amount of water is, therefore, small in comparison with that required in arid regions. Many farmers could fill a pond from a spring, or by damming a small stream, and guide the water during dry spells in simple furrows between rows of crops growing lower down. A windmill may be used to pump the water needed for the garden, using a hose to apply the water, just as the townsman soaks his lawn. The crops should not be sprinkled, for every farmer knows that a light shower during a drouth does harm by favoring new roots near the surface, which are soon scorched by the sun. In irrigation, the soil should be thoroughly soaked, if only once, just as one heavy, soaking rain will do more good than dozens of light showers. There are 6,272,640 square inches on an acre of land. One inch of water, or a stream one inch wide and one inch deep, flowing at the rate of four miles an hour, will give 6,082,560 inches in 24 hours. Hence, such a stream will cover an acre nearly one inch deep in 24 hours, though of course it should soak in as soon as it reaches the plant. This equivalent of one inch of rainfall would require about 25,920 gallons, or 823 barrels of water per acre. The cost depends mainly upon the ease with which the supply of water can be obtained. It has been shown that, where wells can be had of sufficient capacity, the profits are large during drouths. Where the orchard or garden is located in close proximity to a lake, springs, or running streams, the cost will be comparatively slight, as the water can be carried in open ditches, there being no need of saving the water by costly pipes.

Southern Truck Farming.—The horticultural experiments at the Maryland station by J. S. Robinson are reported (B. 25) as showing that healthfulness of stock, from which to propagate, is of the first consideration in tomato-raising. Some varieties are more susceptible to disease than others, hence the selection of seed should be determined by the vigor and productiveness of the plant, and the quality of the fruit. Judicious shipments in advance of local competition offers the largest promise of profit in the trucking industry. The economic use of commercial fertilizer is dependent upon soil, climate and market, as well as the amount of the available plant food contained in them. Fungicides are a preventive, not a cure. Ordinary insecticides have failed to kill the grape scale insect. The strawberry weevil does its damage very early in the season, and is especially injurious to the staminate varieties. The strawberry root louse very seriously injured the plantings in a number of places. The value of firm, productive strawberries for shipping is largely determined by the time of ripening. The best early varieties were Michel's Early, Hoffman and Van Deman. The Gandy was the best late variety. The favorite green-fleshed cantaloupes and other tender vegetables, may be brought to maturity much earlier by starting them, under shelter, in flowerpots, and transplanting to the open ground as soon as all danger of frost is over.

American Sugar Beet Seed.—The sugar beet experiments, extending through three years, by W. Maxwell of the U. S. Department of Agriculture at Schuyler, Nebraska, are reported by H. W. Wiley (C. B. 39) as proving that native American sugar-beet seed has been produced of excellent quality and high germinating power. The yield of seed, owing to extreme drouths in two of the years, was low. An experiment in growing seed upon well selected tracts on the most fertile prairie soils is recommended. The comparative experiments in which home-grown seed was planted by the side of imported seed of the same varieties, and under the same conditions of soil and cultivation, have shown the greater vitality and productiveness of the native American seed, the latter yielding 706 more pounds of sugar to the acre than the imported French or German seed, a gain of 12 per cent. Highly satisfactory results have been obtained in growing beets upon certain tracts of bottom land in the Platte river valley, where an excellent system of surface drainage has been adopted in preparing the land for beet culture. Special experiments were devoted to the study of influences causing loss of weight and sugar in the beet and to the modes of preventing such losses. It was found that high temperature and direct sunlight are the main causes of the decomposition of sugar in the organism, and that storing at a low temperature prevents such decomposition. The experiments of 1893, have indicated that excess of moisture is not an immediate cause of depreciation of quality in the matured beets, as the submersion of the drouth-ripened beets in water for a limited length of time was found to be an excellent mode of preservation. The dumping of many tons of beets into dry sheds, where they may lie for ten days before being worked up in the factory, is known to cause fermentaion, loss of sugar, and difficulty in extracting the sugar.

Methods of Training Grapes.—Many bunches of grapes, on vines trained to stakes, become entangled, and it is very difficult to harvest them without cutting them to pieces. Experiments at the Illinois station by G. W. McCluer (B. 28) proved that some varieties, especially the strong growers, yield decidedly more when on a trellis than when on stakes, and it is much easier to keep them under control and to gather the fruit. Moore's Early did best on a three-wire horizontal trellis; next best on a three-wire upright trellis; next on a single wire; next on a covered trellis; and poorest on stakes. Ives Seedling seemed to do a little better on the upright trellis; next better on the horizontal trellis; next on the single wire; next under cover; and poorest on stakes. Delaware did about equally well on the upright and on the horizontal trellis. The Concord did best on the horizontal trellis. The four varieties, as a whole, did best on the three-wire horizontal trellis, though there was not much difference on the upright three-wire trellis, except in the case of the Concord. The vines on stakes uniformly made the poorest growth and yielded the least. The grapes on the covered trellis rotted less than those on an uncovered row beside them, but they yielded less from failure of the fruit to set. A trellis should be high enough that the fruit may be easily gathered, as the bunches all hang down and are in plain sight from below.

Formulas for Fungicides and Insecticides.—Directions for preparing and using the various spraying solutions and powders are given by G. McCarthy of the North Carolina station (B. 92) as follows: *Bordeaux Mixture:* Dissolve six pounds copper sulphate in a wooden or earthen vessel, with five gallons of hot water. In another vessel slake six pounds of fresh lime, adding water to make a milk of lime free from lumps. Then strain and stir slowly into the copper sulphate solution. Dilute with water until 45 gallons are made, and use immediately. This is the dilute form. It was at first made with 22 gallons of water. Four ounces of Paris green may be added to the 45 gallons, except for peach and other stone fruits, where only two ounces should be used. This makes the best and safest combined insecticide and fungicide for general use. *Ammoniacal Carbonate of Copper:* Dissolve six ounces of ammonia carbonate in two quarts of boiling water. Pour this upon six ounces of copper carbonate, and when dissolved, dilute with water to 45 gallons, and use at once. Two quarts of 26° liquid ammonia may be used instead of the ammonia carbonate. Do not use on stone fruits, nor add arsenites. *Copper Sucrate:* Copper sulphate 6 pounds, fresh lime or washing soda 4½ pounds, molasses 1 quart, water 45 gallons. *Modified Eau Celeste:* Copper sulphate 4 pounds, soda carbonate 5 pounds, 22° ammonia 3 pints, water 45 gallons. *Potassium Sulphide:* Potassium sulphide, 1½ pounds, water 45 gallons. *Copper Sulphate:* Copper sulphate 2 pounds, water 45 gallons. *Liquid Arsenites:* Paris green or London purple 3 to 4 ounces, fresh lime 8 ounces, flour 1 pound, water 45 gallons. *Arsenite Powder:* Paris green or London purple 1 pound, wheat flour 3 pounds, dry road dust or sifted ashes 50 pounds; use dry. *Kerosene Emulsion:* Hard soap 8 ounces, kerosene 2 gallons, water 1 gallon; or soft soap one quart, or hard soap 4 ounces, kerosene 1 pint, water 2 quarts. *Tobacco Decoction:* Tobacco leaves or stems 1 pound, boiling water 3 gallons. *Corrosive Sublimate Wash:* Poisonous corrosive sublimate 1 ounce, soft soap 10 gallons, wood alcohol 1 pint, sufficient water to make a stiff paint. *Corrosive Sublimate Solution:* Poisonous corrosive sublimate 2 ounces, water 15 gallons; dissolve in hot water and soak seed potatoes for the scab-fungus. *Cement Wash:* Hydraulic cement 5 tablespoonfuls, sour milk or buttermilk 1 gallon. *White Hellebore, Pyrethrum Powder* and *Carbon Bisulphide* are used without dilution, when applied as insecticides.

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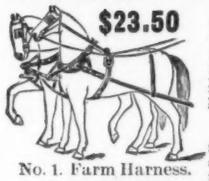

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ANIMAL AILMENTS.

Cracked Heels--Scratches.—J. Donan, Fairfield Co., Conn., desires to know the cause and treatment of scratches in horses. One, and the most frequent, cause of scratches is neglect to dry and cleanse the feet of horses that have been driven in mud, and allowed to remain in the stable all night without having their legs and feet well cleaned. Standing in mud and slush, or even excessive washing with cold water without drying, will excite erythema of the white feet and parts of the body that are white. Washing should be quickly performed, and with the chill taken off the water by adding hot water to the cold. As a rule, the broom and brush should be first thoroughly used, then the limbs rubbed smoothly with absorbent cloths. If resort is had to washing, the legs only, below the knees and gambrels should be washed and then dried thoroughly. The treatment consists of cleanliness, sponging the affected parts with a solution of sulphate of copper, two ounces to the pint of water, and applying carbolated glycerine at night.

Swollen Hock from a Kick.—George H. Truitt, Delaware Co., Ind., desires advice for the injury of the hock of a valuable two-year-old filly, from a kick. The joint is swollen on the inside and on cap of the hock and below it to the size of a man's fist. It is not painful, but the colt is slightly lame. "Will it have a blemish?" Though there is no statement as to the length of time since the injury, yet from there being no pain, or tenderness on pressure or handling, the injury is probably not recent; and from the fact of slight lameness, there is a certainty of present deep-seated inflammation, which may be from a bone spavin having been started. There will probably be more or less blemish. If relief from the free external application of tincture of iodine, saturated with iodide of potassium, daily applied, and afterwards covering with rubber tissue, does not give relief in two weeks, the case will terminate in both blemish and lameness. If well bred, and all other things being favorable, the filly might be put to breeding. It would pay to get the advice of a veterinarian after an examination.

Catarrh or Common Cold.—D. K. Adams, Jefferson Co., N. Y.: Catarrh is the most frequent affection of man and animals during the inclement seasons of the year. It is an inflammation of the mucous membrane of the nose and throat. It is caused by drafts of air falling upon the body when in a state of perspiration; or from the feet and legs becoming wet from mud, snow, slush; standing in cold, damp stables; standing the horse at the hitching-post, when warm, without proper clothing and care, and especially when the unprotected head and chest are exposed to a cold, damp wind. In this state the least draft or cold excites distressing fits of coughing. The rational treatment of animals sick from colds is to place them in warm, dry, airy stalls, with warm woolen covering from head to feet, bandaging the legs from the feet, and give warm water with a teaspoonful of saltpeter. Steam the head and throat, and give a good saline draught to open the bowels, unlock the skin, and loosen the cough. Five grains of muriate of ammonia in the hot tea will relieve the cough by loosening the mucous secretions. Prompt treatment of simple colds prevents chronic complicated troubles in the home and on the farm. An excellent addition to the hot teas is aromatic spirits of ammonia in half teaspoonful doses for a child, a teaspoonful or two for a sheep, calf, or young colt, and an ounce for a horse or cow, frequently repeated.

Painless Surgery in Small Operations.—J. P. Enos, Brevard Co., Fla.: Warts can be removed as well by the farmer and dairyman as by the hand of the professional surgeon. There is no reason why they should not practice and properly perform many operations of minor surgery in a humane manner upon the faithful and feeling animals of the farm. The same anæsthetic—producing insensibility from pain—locally applied, is not only useful for the animals of the farm, but also upon the members of the family, for cuts, bruises, burns, boils, and the subsequent dressings of these. An ounce of a twenty per cent. solution of cocaine may be obtained at the druggists; a dram or two locally applied, by means of a small, soft sponge upon the human skin, for five or six minutes, or upon the teats of animals for ten minutes, just where the operation is to be made, removes all feeling for from fifteen to twenty minutes. Where there is hair on the part to be operated, this must be clipped off or shaved. The application, occasionally, to painful boils, of this solution of cocaine temporarily relieves the pain and suffering, thus securing a good night's sleep and freedom from pain. Where boils or abscesses are to be opened, the agony and dread of the operation is completely removed. Moistened lint, or several folds of an old linen handkerchief or napkin covered with oiled silk or piece of bladder, retains the moisture and keeps up the anesthesia for a longer period. Bee stings and slivers in the flesh can be removed by the local application of cocaine. A few drops in the eye will enable dirt or other substances to be wiped out without inconvenience or pain. All medicines should be plainly labeled so that accidents may not occur. No evil effects are produced by a lengthened local application. The solution will keep by the addition to the solution of cocaine of two or three grains of boric acid, which in no way impairs its efficiency or value.

Hog Cholera.—Conrad Spicer, Alexander Co., Ill.: To prevent this disease of swine, feed a mixed diet—buttermilk, mucilaginous food, such as oilcake, roots, crushed oats, with a sprinkling of charcoal and ashes; a little sulphate of iron in the drinking water will prove of service. Great cleanliness and pure water are essential. Keep the pigs growing. Silage is a good occasional winter food for hogs. Swine should get a variety of cheap green foods. Bring no diseased pigs into the herd.

Malarial Rheumatism.—James L. Siter, Essex Co., N. J., purchased a cow late in the fall that had run in a swampy pasture. She was fresh and a large milker. Though she has a free run in a dry yard, she seldom goes out even to get water unless driven. She acts like a foundered horse, stiff, and lifts up her feet, as such horses do. Of course if she does not get water regularly she loses in her milk. A warm, sunny, dry, clean stable, well-bedded with straw, free from drafts, and a good, stout blanket constantly worn, with brisk hand-rubbing of the legs morning and evening after milking, with a small handful of common salt, a tablespoonful of rochelle salts, and the same of nitrate of soda daily put into a thin bran slop, will doubtless relieve the cow of the malarial rheumatism, and improve her milk yield.

Fainting in Animals.—J. Ensee, Lawrence Co., Ohio: Horses or cattle when long confined to the stall without exercise are liable to fall in a faint. From this momentary heart derangement they quickly recover and may never have a similar attack, even under similar conditions. But fainting may occur from an enfeebled heart. This requires fresh air, stimulants, as ammonia inhaled, or alcoholic stimulants given by the mouth, followed by generous feeding and iron tonics.

Diarrhœa in Cats.—Eunice, Texas Co., Mo., asks, "What ails my pet cat? She has always been neat and tidy, but for a few days she messes everywhere." The cat has been overfed with fat meat. Give her half a teaspoonful of castor oil. In six hours give half the quantity, and after it operates, give the following: Wine of ipecac, one dram; tincture of kino, three drams; decoction of logwood, four ounces; three times daily. If there seems much pain, give five or six drops of paregoric in each dose of the above. If the cat does not take the medicine when kindly and gently given, roll her quietly in a towel so that the head only is seen.

Cough in Horses.—Inquiries for remedies for cough of horses are so frequent that we give the remedies of the best veterinary practitioners. Coughs often come from derangement of the digestive organs, and mere anodynes will not correct these functional ailments. Professor Dick's recipe is thirty grains each of calomel, digitalis, opium and camphor made into a ball. Where the remedy is to be used daily for a week or more, the calomel is omitted. The efficacy of this compound is largely due to the regulation of the bowels, while the other ingredients remove the irritability. During the inclement seasons of spring and fall, cough is frequent in all domestic animals. Although a cough is not a disease, but a common symptom of several diseases, yet the removal of the cause often leaves a chronic condition accompanied with a cough, which may be relieved by giving daily one of six balls made by mixing sufficient linseed meal to one ounce of tar to make six balls. Cough after influenza, bronchitis or pneumonia with much secretion, one dram of sulphate of copper; two drams of extract of ginger, made into a ball with linseed meal, given daily for a week will be found useful.

Spring Weakness.—S. L. Fitch, Cattaraugus Co., N. Y.: Spring weakness is common in animals poorly wintered. Such animals require gentle physic occasionally, and a gradual improvement in the quantity of food as well as the quality. Nursing, grooming and prompt treatment for lice, should they infest the animal, should be instituted. A change of diet, in the spring of the year, exerts a goodly influence. Pregnant animals require strength for the approaching parturition. It should be remembered that the young during gestation receives nourishment at the expense of the blood of the mother, and that this must come from the food consumed.

Red Water—Hematuria.—S. S. Waldo, King Co., Wash., has a cow six years old that has had "red water" for over six months, which has baffled the skill of four veterinarians. Under such circumstances, our advice may not be of much service from this great distance, and without a test of the urine. But on general principles, tonics as iron, gentian and laxatives of oil, or salts, with a generous digestible diet, will render all the service that can be expected. Linseed meal, bran, dry hay, two drams each of sulphate of iron and iodide of potassium once daily for a week, with two or three days intervention, and then renew the treatment. Should there be any serious affection of the kidneys, probably no treatment will render much service. If possible, the cow may be fattened and slaughtered as an economy.

Scours in Calves.—J. G. Johnston, Ohioville, Pa., kindly sends us a remedy for scours in calves. Pounded corn cobs, a handful to a quart of water, boiled half an hour and added to the milk fed morning and evening, has cured the worst cases of scours. Those using the remedy will please report the result of this treatment to "Animal Ailments."

Ringworm.—F. H. Washburn, Cumberland Co., Tenn., owns a litter of pigs, one of which has a red spot on each side of the head, just below the ears. These spread, reaching the eye on one side. This favus, or honeycomb ringworm, is contagious. The following mixture, applied twice a day, will remove the affection: Olive oil eight ounces, Goulard's extract of lead one ounce, laudanum one-half ounce. Put in a bottle and shake well before applying. Tincture of iodine, daily applied, is a reliable remedy. Also half an ounce of bisulphite of soda to a pint of water is an application of value. Internally, for a young pig, a tablespoonful of castor oil will aid the external treatment. As a general rule, where a disease occurs in young animals, it will be advisable to separate the sick from the well, lest the affection prove infectious or contagious.

Cancerous Tumors in Hogs.—A neighbor spoke to me recently about some peculiar looking tumors that came upon the nose of some of his pigs. He had cut into one of them, expecting to find a fluid of some kind, but said there was none. I went over to examine them, as it excited my curiosity. I found five in which the swelling had made considerable progress. The one that he had put the knife in had not healed, but the lips of the wound had spread apart and everted, a marked diagnostic symptom of epithelial cancer. These pigs were less than three months old. For the past two or three years he tells me he has had similar cases, having two large hogs to die from it last year or the year before. The growth is quite rapid, soon pushing the upper lip on the infected side out so the pigs cannot pick up their food. I advised him to kill and burn all of the animals that show any symptoms of the trouble. Four or five years ago he had a cow with a large cancerous growth over one eye that grew to be a horrible looking object, and he kept the animal fully a year against my advice. The cow was always rubbing against fences, posts, etc., smearing them with blood and matter, and I firmly believe the disease has in this manner been handed down. Of course there may have been other sources of infection, but it is

evident that this is the most natural one. It is a very serious matter to get a farm inoculated with any contagious or infectious disease, and especially with such a loathsome one as this. Ordinary disinfection will not meet the requirements. Probably turpentine, corrosive sublimate and carbolic acid combined would be the best disinfectant that would be cheap enough to use extensively: say spirits of turpentine one quart, corrosive sublimate one-half ounce, carbolic acid one ounce. Mix and apply with a paint brush to pens, fences, posts, etc., to every place in fact that an animal could reach to rub the sore spot against. I have pretty well established the fact that these bleeding warts, common upon horses and cattle, are infectious, whether they have the true cancer cell growth or not. I have not had the opportunity to make a microscopic examination for cancer cells, but from external and general observation I strongly incline to the opinion that they are cancerous, and should receive more careful attention than they generally do. A. G. CHASE, Kansas.

Ox Warbles.—Jno. S. Clemons, Dougherty Co., Ga., has a heifer that was fat and healthy when put in pasture, but when removed therefrom she was covered with lumps and holes, and poor and without the least appetite. These lumps contained the warble. Where there is much irritation the grub may be removed by pressure where there is a small opening, and destroyed, or with a sharp knife the tumor may be opened and the grub removed. A mash of wheat bran, in which four ounces of Glauber salts is dissolved, and an ounce of ground gentian is mixed, will restore the appetite. A perfectly healthy male will improve the stock, where the females are also healthy for three generations. There is no method by which males or females may be bred too well. Both Berkshires and Poland-Chinas are valuable breeds of hogs. The first is smaller and many think superior for close confinement. Judicious breeding and feeding of either will give satisfaction.

Open Abscess Under Jaw of Mule.—Albert Schlapback, Republic Co., Kansas, has a mule that had distemper, resulting in abcess of a submaxillary gland. The animal has a discharge from the nose, the abscess discharges, and the mule is weak, sweats easily, and keeps in poor condition. There is probably a fistulous condition of the open sore, and will require to be opened by a veterinary surgeon, which will be the only prospect of effecting a permanent cure of the case.

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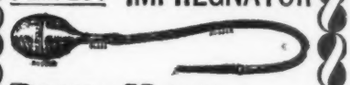

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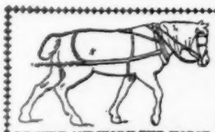

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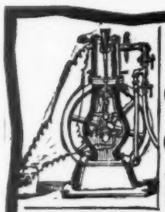

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THE NEW SEASON'S PROSPECTS.

The General Situation.

The outlook is better than the public might infer from the daily journals. Uncertainty over the tariff continues to have a depressing effect, but stocks of manufactured goods are everywhere low after nearly a year of decreased production, and a moderate demand must cause many factories to run during the summer months. With returning confidence and activity, the people will consume more food, clothing and other necessities of life, luxuries will again be in demand, and fairly prosperous times will return.

The Country is Bigger Than the Tariff.—If notice were given that the existing McKinley tariff was not to be changed for a period of years, the wheels of industry would revolve once more. If the Wilson tariff were enacted, the country would quickly adapt itself to the new conditions. In either case, certain interests would suffer, but the American people readily adjust themselves to circumstances, and this wild talk about the country going to the bow-wows in either event is foolish in the extreme. For some months the country has been between hay and grass on this tariff matter, and such uncertainty is blighting. The United States is bigger than any tariff law, but it is not big enough to instill confidence into the public mind while Congress acts neither one way nor the other. Fewer laws and those more simple and just, and fewer changes in them—are highly desirable.

Prosperity is Dependent Upon Bimetallism, in the judgment of a great many people. The students of this problem charge the present hard times and era of low prices as largely due to the appreciation of gold. Advocates of the single standard, that is, of gold as the basis for all values,—assert that over-production and reduced cost of production are the chief reasons for declining prices. This question is evidently to be uppermost in the public mind until a decision is reached satisfactory to the majority.

At present, strict monometallists are comparatively few in the United States. Apparently the majority favor the use of both gold and silver, but many of these think it imprudent for this country to coin more silver until the other commercial nations agree to do the same, while others think it unnecessary to wait for other nations to act. In short, the people are divided into four groups: 1, The monometallists; 2, international bimetallists; 3, domestic bimetallists, who advocate more silver, but not enough to hinder the cause of international bimetallism; 4, those who advocate the free and unlimited coinage of all silver that may be presented at the mints of the United States.

The extremists of the first and fourth group are becoming less and less, as the question is being more intelligently investigated in the Northeast, as well as at the West and South. People in the North and East now seem disposed to consider this matter on its merits, and with fair play on all sides, the evils of sectionalism are not likely to interfere with the return of prosperity.

Alarm for the Future, therefore, finds small place in a broad survey. Agriculture especially is on a stronger basis than any other American industry. Relative to the capital and labor employed, the average farmer owes less than those in other occupations. The census returns, which have been so clearly set forth in the AMERICAN AGRICULTURIST, prove this. Edward Atkinson has also shown that the mortgage debt on real estate in New York county and eleven adjacent counties is more than one-half as much as the mortgage debt of the entire West (from Ohio westward), cities, farms and all! and is more than one-fifth of the whole mortgage indebtedness of the United States.

Even at the very worst, therefore, the farmer compares well with other industries. While there is much injustice to be righted, and though we see no grounds for any immediate "boom" in agricultural values or profits, the farmer is as well off as any other class, and has a surer hope and less risk for his future.

What of the Wheat Crop?

A sharp decrease in the stocks of wheat in sight during March confirmed the review of the situation published in the March number of this magazine. It appears that on April 1st the world's visible supply was over eight million bushels less than on March 1st. It was stated by Beerbohm and Bradstreets at 175,960,000 bushels, or 2,300,000 *less* than the supply at the same date a year ago. This shows a marked tendency in consumption to catch up with the supply. Hence there has been some improvement in the wheat market, though prices have fluctuated considerably with the news as to crop damage and the mood of speculators. At Chicago, prices for regular No. 2 wheat for delivery in May were 63 to 64½ cents per bushel on April 10th, or an advance of about eight cents in two months. Wheat for immediate or spot delivery has advanced similarly.

Stocks Reduced, Prices Lower.—It is again remarkable that though the world's visible supply is less than a year ago, prices are still about ten cents a bushel less than a year ago. The speculative fraternity is betting that this difference in price will continue, as they offer to contract to deliver No. 2 wheat at Chicago in September next for 66 cents per bushel, whereas a year ago at this time September wheat was 76 cents. On general principles, an improvement in prices should prevail. We cannot gauge the quantity of old wheat in farmers' hands. There are countries in which large stocks still exist, but there are also sections that have hardly wheat enough for seed. The movement during March showed either that stocks in farmers' hands are comparatively small (as the government report indicates), or that farmers are holding back their shipments in anticipation of better prices.

The New Crop certainly ought not to be grown on an increased area. Prices last fall did not warrant any increase in the area of winter wheat in the United States, and there is no evidence of such increase. Indeed, Kansas reports five per cent. less acres sown last fall than in previous years, although the '93 crop was a very short one. A considerable portion of this fall wheat has been injured by unfavorable weather, and will be plowed up, but just how much will be so treated, and how serious has been the damage to what is left, depends upon the season. The official April report makes the condition of winter wheat for the whole country 86.7 per cent. of a full stand, five points better than last year at this time, and eight points below the record of April, '91. The government reports that climatic conditions were favorable up to the March cold wave, the extent of the damage by which remains to be seen.

There is no encouragement to put in more than the usual breadth of spring wheat. Indeed, the disposition is to restrict it as much as possible. Whether it will be done remains to be seen. The prudent farmer will grow less wheat this year than for a long time, wherever he may be. Prospects of a big crop in the Argentine Republic have been reduced by drouth.

The Problem of Cotton.

The condition of the average planter is better than for several years. All through the South we find the testimony of competent observers, confirmed by numerous planters, conclusive on this point. The farmers have been diversifying their crops of late years, raising more stock and making their own supplies. They have been buying less and raising more of what they consume. They have received fair prices for cotton seed, which has added materially to the revenue from the cotton crop. Especially has the Southern farmer been making efforts to get out of debt during the past three years. Last season his efforts were forcibly assisted by the absolute refusal of credit on the part of many merchants, who were unable, on account of the panic, to get money with which to buy goods. As a consequence, the average cotton planter is really better off to-day than at any time since the war. In Texas especially is this true, many farmers owing nothing on last year's account, and having several bales of cotton still on hand. All this has greatly strengthened the farmer's financial position, and with cheap money available we fear merchants will try to induce planters to accept advances and thus lead to an increased planting of cotton. Let the Southern planter hold the position he has gained, plant no more cotton than he can work without credit, and at the same time raise his own supplies, and his position next winter will be an enviable one, with more remunerative prices for cotton.

State of the Market.—The quantity of cotton that came in sight during February and March was considerably less than in the corresponding period of last year or previous seasons. This tends to confirm the opinion that previous large receipts represent more of the crop than is usually sold at this season. The total amount of cotton that came into sight during the seven months ended April 1st, thus compare, in bales:

Came in sight	1894.	1893.	1892.	1891.
Seven months,	6,798,625	6,010,785	8,348,547	7,866,588
Balance season,		706,356	690,160	788,930
Total crop,		6,717,142	9,038,707	8,655,518

For comparative purposes we append a brief summary of the visible supply of American cotton and of actual receipts from plantations, (in thousands, last three figures omitted):

American Visible Supply,	1894.	1893.	1892.	1891.
On April 1,	3,456	3,415	3,733	2,612
On Sept. 1,	1,707	2,130	1,237	598
Net gain,	1,749	1,285	2,496	2,014
Consumed,	3,942	3,560	4,392	4,618
Receipts from plantations,	5,691	4,845	6,888	6,632
World's visible, April 6,	4,406	3,959	4,310	3,283
Middling upland, per pound.				
At New York, April 6,	7⅞c	8⅝c	6⅞c	8 11/16c
At London,	4 7/16d	4 5/16d	3⅜d	4 13/16d

A Reduced Yield of Fruits is the natural result of the unusually cold weather throughout the fruit belt in the latter part of March, following several weeks of warm and budding weather. The injury has been heightened by the April blizzards. It is undoubtedly true that the peach crop in Maryland and Delaware, and throughout the Central Southern States, will be very materially curtailed, with a similar effect on other early small fruits. The damage has not been as serious in the more northern fruit belt, although the prospects are that even there the yield of peaches will be reduced. It is too early yet to judge accurately of the damage done to the late fruit, especially apples. There is a disposition on the part of many fruit growers to look on the dark side of matters, but it is quite likely that they will receive as much if not more money for their reduced yield than they would have got for the promised larger crops.

The Freeze in the Mississippi Valley.—Wm. Robson, Phelps Co., Mo., writes us: The night of the 25th of March the thermometer fell to 10° above zero. The freeze did great damage to the fruit and vegetables throughout this section. The buds of the pears, cherries, plums and apples are killed, with the exception of late blooming apples. Strawberries are materially injured. There will be no peaches whatever. Wheat is badly damaged, and the early-sown oats appear to be entirely dead.

No Southern Fruits This Year.—P. J. Berckmans, Ga., President of the American Pomological Society: The late freeze has completely annihilated the prospects for fruits in Georgia, as well as early vegetables. A great deal of young nursery stock was also severely damaged. The losses by this freeze are general throughout the South, hence Southern fruit supplies will be almost nothing this coming summer.

Live Stock is in a healthy condition in most sections. The storms in the Northwest have caused heavy losses, and throughout a large area of the West and South animals are thin in flesh. But there is far less disease prevalent than usual. Reports that are beginning to come in from the various State Boards of Agriculture confirm a very material reduction in the number of sheep, and in Kansas milch cows and other cattle are less by nine to twelve per cent. than at this date a year ago. The markets for live stock, both at home and abroad, present no new features, and there is little reason for expecting an immediate improvement in values.

Tame Grasses are being grown on a much larger scale than heretofore in the West and South. Alfalfa is attracting more attention than any other grass or clover. Its acreage has enormously increased during the past four or five years. It is now grown on a large scale almost as far east as the Mississippi and Missouri rivers, and is found in Colorado to thrive at altitudes and under conditions that heretofore were regarded as fatal to this now popular crop. Where it thrives, alfalfa proves a wonderful rejuvenator of the soil, as well as the greatest yielder per acre of animal food of any crop grown by the common farmer.

A Helpmate of the Home.—The AMERICAN AGRICULTURIST is always a very welcome visitor and a helpmate of our home.

W. F. HAWES, Kanawha Co., W. Va.

How to Dehorn Cattle.—There are a great many ingenious and useful devices for removing the horns from grown cattle besides the familiar meat saw. The better plan, when the opportunity is afforded, is to remove the little knobs from the calf's head that effectually arrests the growth of horns. Prof. Roberts, of Cornell University, advises that the earlier the application is made in the life of the calf the better. So soon as the growth of horns can be detected, he takes stick caustic potash and clips the hair closely from the skin over the little horn and moistens the spot with water, to which soap or a few drops of ammonia have been added to dissolve the oily secretion of the skin. Care must be taken not to moisten the skin except over the horn. Dip the end of the stick caustic in water until it is slightly softened, and then rub on the moistened surface of the little horn. This operation is repeated from five to eight times until the surface of the horn becomes slightly sensitive. It causes the calf no pain, a scab forms which drops off in a month or two, leaving a perfectly smooth poll.

West Lebanon, N. H.

Dartmouth Professors Called It Incurable

But Hood's Perfectly Cured —A Frightful Ulcer.

"In 1886 a little sore gathered on my left ankle which soon became painful and broke open, discharging freely. The family physician termed it an ulcer, commonly known as an old man's sore, due to the poor state of my blood. The doctor's treatment did not seem to benefit me as the sore spread to the size of a saucer. I was greatly run down by it and had to give up business. The doctors said owing to my advanced age it was their opinion

The Sore Was Incurable.

In 1888 I made a trip to the faculty at Dartmouth College, determined to have the ulcer operated upon. The surgeons deemed it inadvisable to perform an operation on the ankle, claiming that my advanced age, 78 years, in itself was a barrier, and that only temporary relief could be given. I returned to my home in West Lebanon discouraged and disheartened. I was pining over my misfortune whan a friend urged me to give Hood's Sarsaparilla a trial. I bought one bottle. I had taken only a part of it before I noted a change in my case. The eruption took on a healthy appearance. I persevered with the medicine, my faith in

Hood's Sarsaparilla Cures

it having been greatly increased as the beneficial effects became apparent. I took six bottles of Hood's Sarsaparilla and at the end of that time the sore

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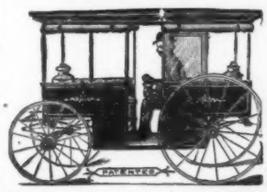

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TABLE I.—COMPARATIVE GROWTH OF MANUFACTURES.

(Dollars and Employees in Round Millions.)

U. STATES.	1890	1880	1870	1860	1850
Factories..	355,401	253,852	252,148	140,433	123,025
Capital.	$6,254	$2,790	$2,118	$1,009	$533
Employees .	4	2	2	1	—1
Wages	$2,282	$947	$775	$378	$236
Materials...	5,158	3,396	2,488	1,031	555
Products	9,370	5,369	4,232	1,885	1,019

The detailed statements concerning the conditions of farming in the last and preceding decades, have already been published in these pages, but the items which correspond to those in the table of the comparative growth of manufactures are here reproduced for comparison by the reader. The statistics in both tables have been compiled by the AMERICAN AGRICULTURIST from the United States census returns.

TABLE II.—COMPARATIVE GROWTH OF AGRICULTURE

(In Round Millions.)

U. STATES.	1890	1880	1870	1860	1850
Farms	4.6	4	2	2	1
Capital	$15,979	$12,104	$9,996	$7,104	$3.533
Persons	25	22	15	8	5
Real Estate.	$13,276	$10,197	$9,262	$6,645	$3,271
Machinery .	494	406	336	246	151
Live Stock .	2,208	1,500	398	213	111
Products....	2,460	2,212	2,447	1,500	1,299

It will be noticed that the number of factories was nearly doubled from 1860 to 1870, but that there was practically no increase from 1870 to 1880. During the latter period the number of farms which had remained nearly stationary during the decade of the Civil War, was doubled, owing to the rapid settlement of the Great Plains, consequent upon the building of the transcontinental railways. From 1880 to 1890 the number of factories has again rapidly increased, while the number of farms has increased only 14 per cent. The rapid improvements in transportation during the Seventies, both on sea and land, led to the settlement and development of vast areas of agricultural lands, not only in the United States, but all over the world. The sudden increase in the farms and farmers since that time is no small factor in the present overproduction of staple grains and the consequent low prices of farm products. As such a one-sided agricultural development is now being counteracted by an increase in other industries, it is to be hoped that the price of factory and farm products to the consumer will more nearly approach the price of factory and farm labor. A better distribution of the benefits of machinery, steam and electric power is needed before agriculture will rise from its depression.

In the census of 1880, the statistics of a number of manufacturing industries were not collected, so that for a proper comparison of 1890 with 1880, these industries should be deducted from the returns for 1890, as they are in the following table, which shows, in round millions, the increase in manufactures and the percentage of increase as given by the Commission of Labor in charge of the completion of the Eleventh Census. These statistics do not include those of mining and quarrying.

TABLE III.—INCREASE OF MANUFACTURES, 1880-'90.

(Dollars in Round Millions. Only Industries of '80 Included)

UNITED STATES.	1890	1880	*Incr. %*
Factories	322,624	253,502	27
Capital	$6,138	$2,780	120
Employees	4,476,094	2,700,732	65
Wages	$2,171	$939	131
Materials.....	5,018	3,395	47
Products..	9,054	5,349	69

The finished products of the factories are thus seen to be four times as valuable as the raw materials produced by the farms. The raw materials when they reach the factories, cost twice as much as the raw materials produced on the farms. The products of mines and quarries are also used by the factories, and these, with cost of transportation charges, partly manufactured materials and imports, make up the difference. If the products of the factories are worth four times the products of the farms, very much labor must have been expended on the raw materials, and the farmers will gladly feed more such laborers, if the prices of farm products will warrant the use of more factory products. None of our farmers are living so luxuriously that they will be displeased at a growth of manufacturing industry, which should bring them more of such home comforts as are made in factories.

Kind Words.

One Article Worth a Good Many Years' Subscription.—There is hardly a number of the AMERICAN AGRICULTURIST that does not contain some article worth the subscription of a good many years. MRS. A. F. SPENCER, Shiawassee Co., Mich.

Should be in the Family of Every Farmer.—The AMERICAN AGRICULTURIST is just the paper that should be in the family of every man engaged in farming. It meets all the requirements for the farm and home. J. J. TAYLOR, Livingston Co., Ill.

Too Grateful to Stop It.—We had thought of discontinuing the AMERICAN AGRICULTURIST on account of the very hard times, but as an article in the last number was the means of saving the lives of some very valuable hogs which would no doubt have died but for the advice and instruction given, makes us so grateful that we shall never think of stopping it. C. M. RICHARDS, Oneida Co., N. Y.

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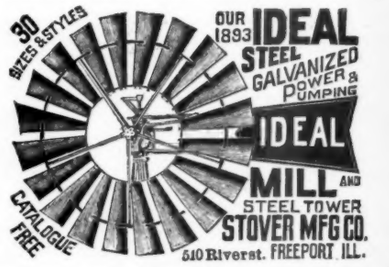

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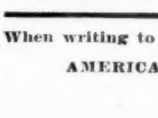

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Rape Among Crimson Clover.—Harford Co. Farmer, Md., sends us a specimen of a plant which he states has come from France in crimson clover seed. "It is of the turnip tribe, but neither turnip nor rutabaga. The seed was sown last June on corn ground. It made a very rapid growth last fall, both in root and foliage. The latter made a wonderful growth, and now I have a man employed cutting it off below the surface at a cost of $4 or $5 per acre on a nine-acre lot. I am afraid to let the plants go to seed, as they would ruin the field." The plant is the common rape of Europe, which, if left to go to seed, would certainly injure the clover materially, but if the plant is not allowed to go to seed, the roots would do no harm, as it does not live more than two years, the plant being a biennial. An excellent article on rape has appeared in our February number of last year.

Wounds on Trees.—Jas. P. Gardener, Kings Co., N. Y.: The wound made on a tree, by a horse peeling away the bark, should be immediately covered with grafting wax applied when hot with a paint brush, or some similar implement. If the surface of the exposed wood was left rough by the teeth of the horse, scrape it smooth before applying the wax. A few cents' worth of wax, to be obtained at almost any seed store, will be sufficient, and it may be melted in a tin dish or small iron kettle. After applying the wax, you may dust the surface with dry sand soil, or any dry coloring matter to hide the wound and make it less conspicuous should you desire to do so. The object of applying wax, paint, tar and other similar materials is merely to protect the exposed parts until it is recovered by a new growth of wood and bark, which may require one or a half dozen years, according to the size of the original wound.

Number of Teeth in Men and Animals.—T. C. Bryant, Nelson Co., Va.: As in the human subject, so in the horse, there are three kinds of teeth. The incisors, or front teeth, are called nippers in the horse, the canine in man, and in the dog are called tushes. All have grinding teeth, or molars. Man has thirty-two, while the horse has forty, except that usually the mare has no canine teeth, or in all numbering thirty-six. Both man and animals have milk or deciduous teeth in infancy. The horse, at maturity, has twelve nippers, six above and six below, and twenty grinders, six above and six below on each side, and one tusk on each side of each jaw. These tusks are not shed, nor are the last three grinders on each side above and below. As animals are more or less artificial in their domestic lives, so they require the frequent care of the teeth. This branch of the veterinary surgery has become a specialty in cities. Horses have the toothache, decayed teeth, and often suffer from caries of the jaw bones. Many accidents occur to the horses' teeth from stones, nails and wire accidentally getting in their food. The ox tribe, like all the horned ruminants, have no nippers in the upper jaw, a thick pad taking their place, so that, like man, the ruminants have thirty-two teeth at maturity. Sheep have the same number of teeth as man, and, like the ox, have no canine teeth. The pig has forty-four teeth at maturity. The dog has forty-two teeth.

Distemper in a Collie Dog.—David Johnson, Jefferson Co., Ind., has a Collie dog about two years old that has a constant jerking, downward motion in his loins or hips. This is ceaseless. It is a nervous affection, as a result of a peculiar disease of dogs called distemper. It rarely attacks the Collie breed of dogs, and in consequence in this case is more unpromising of cure. This chorea in the dog is similar to stringhalt in the horse. Both baffle treatment. An occasional emetic of syrup of ipecac, or a laxative of castor oil, the removal of worms, and the application of a mustard plaster to the loins, may give some relief. Strychnia has been given with some benefit, but the most humane method is suffocation with chloroform, and the cheapest is the purchase of another dog bred from healthy parents.

Keeping Up With the Farm Work.—R. F. Storey, Custer Co., Montana: The successful farmer is the one who keeps up with his work. In the spring the teams have been driven and engaged in other work that their shoulders may be hardened and ready for the arduous labor of plowing and similar work. Implements are ready for instant service. The seed grain is all thoroughly cleaned and put away for seed time. The fences that may have become dilapidated or out of order during the winter, are placed in proper condition so that when stock are turned into the field, they do not have the range of the entire premises. The corn is kept free from weeds, and at haying time work is commenced promptly, and the work is pushed also at harvest. The first field of grain for the harvest is cut when hardly ripe, but the juices contained in the straw will fully develop the kernels. The next field is cut at just the right time, and the harvest is finished before any is lost by over-ripeness. Thus all the work has progressed, while an easy-going neighbor on the same sized farm with the same amount of help is always behind with his work, and there is a continual direct and indirect loss from one year's end to the other.

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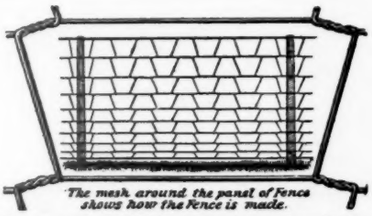

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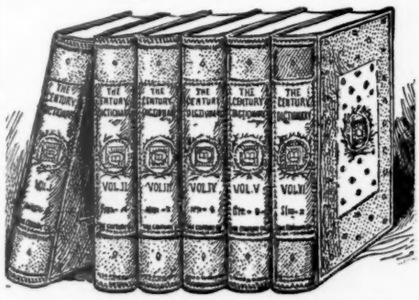

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Drinking Cold Water When Perspiring. — J. J. Merritt, Giles Co., Tenn.: Farmers caution their men not to water the horses when sweaty, but they themselves will drink freely of cold water when in a state of perspiration. They drink it because they are thirsty, and often to excess. If it will injure a sweaty horse, it will have the same effect upon a man. If you must drink when the blood is heated, do so in moderation and slowly. Hold the first few swallows in the mouth for a moment, or until warmed to near the temperature of the body. It will not then produce the shock to the nervous system that the taking of much very cold water into the stomach would. By this plan you can satisfy thirst with a less quantity. With many people even moderate labor or exercise opens the pores with attendant perspiration. Such people may avoid this by drinking sparingly of water or other liquids. It requires considerable will power not to drink freely when thirsty, and the water is at hand.

Permanent Stairs or Ladders in Barns.—H. L. Beaumont, Wyoming Co., Penn.: It is very strange how some farmers, year in and year out, will climb up in the barn or hay mow to put in and take out hay, straw and other fodder without the aid of a ladder or stairs, but climb from a manger, box or barrel, grasp a brace, stringer, or other projecting portion of structure, and by an extra effort swing or throw the body upward, and perform similar gymnastic feats to again reach the floor. This is most often done in midwinter when the hands are encumbered with heavy mittens. These operators can thank their stars that they do not fall, endangering life and limb. By the expenditure of a few dollars and a day's time, an easy and safe way of access could be made to any of these lofts, and one would actually save enough time between the sensible and the careless way in a year's time to cover all the expense of construction. It may possibly make a man more muscular to twist about and hang by one hand to reach the hay mow, but the more considerate prefer the easier, safer plan. In wagon houses in which horses are stabled, stairs should, by all means, be used to reach the loft, as then women and children can often feed the horses with perfect safety. Skeleton stairs can be erected with simply the steps and sides, but they should be made strong and firm.

The Family Horse. — T. K., Buchanan, Cedar Co., Iowa: The family horse is the most admired and useful of all domestic animals. In many families they have been twenty years in their service. They are faithful, kind and true, and when their days of usefulness are about over, rather than see them go into the hands of strangers, perhaps to be abused, they are kept in idleness until a natural death liberates them, or if enfeebled or diseased their life is ended with as little pain as possible. Hence, in choosing a family horse, that is, one that any grown member of the family can handle and drive with safety, obtain one of a known kind disposition. Speed is of secondary importance. Do not sacrifice safety for looks. Neither should he be small. One weighing eleven hundred pounds is none too heavy, as often they will be required to haul a two-seated vehicle containing four persons, and a heavy horse can readily do this regardless of the condition of the highway. Do not purchase a dainty eater, but preferably one that has a good appetite, for, if in the village, many refuse vegetables from the garden may be judiciously added to the regular rations. A large horse is more apt to be kind and gentle than a small, nervous one, and the first cost should be but a trifle, if any more. A strange horse intended for family driving should be obtained on a week's trial before the bargain is concluded, as daily driving for six days will bring to your notice any undesirable qualities, should they exist.

Removal of Afterbirth in Cows.—D. F. Vanness, of Waverly, Kansas, has had a good deal of experience with calving cows, and he advises that the removal be done at the expiration of twelve hours where nature has been remiss.

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England's Position as a Wheat Buyer.

The breadth of wheat in the United Kingdom has averaged only 2,513,000 acres annually during the past eight years, contrasted with 4,092,000 acres in the period ending with 1860, while last year for the first time wheat was grown on less than two million acres — exactly 1,955,000 acres. Yet the average yield per acre for the last eight-year period has been higher than during any equal time in forty years. Here are the data on these two points:

AVERAGE YEARLY ACREAGE AND YIELD OF WHEAT IN THE UNITED KINGDOM.

AVERAGES FOR	*Acres.*	*Yield.* (Bu. 60 lbs)
8 years, 1852-3 to 1859-60.....	4,092,000	28.38
" " 1860-1 " 1867-8.....	3,753,000	28.88
" " 1868-9 " 1875-6.....	3,788,000	27.13
" " 1876-7 " 1883-4.....	3,091,000	25.25
" " 1884-5 " 1891-2.....	2,513,000	29.88
40 years, 1852-3 to 1891-2....	3,447,000	27.88

Causes of this Decline.—Speaking generally, it will be found that a good yield, or relatively high price, has tended to check reduction, while contrary conditions in these respects have had the effect of accelerating it. The recovery in the area over the third period of eight years, especially in the first and second years, 1868-9 and 1869-70, is obviously a natural consequence of the higher price over the two preceeding harvest years; while the general, though slight increase throughout the period is accompanied with fair maintenance of price up to nearly the end of it. As the summary shows, it is over the fourth and fifth periods that the very great decline has taken place, and it is over these that the very marked decline in price prevailed. Further, it was within the fourth period that the disastrous harvest of 1879 occurred, not only in the United Kingdom, but in Western Europe generally. This led to some increase in price, and to greatly increased imports, which, with the exception of one or two years, have steadily increased ever since. In fact, it was the very bad season of 1879, succeeded by several of less than average yield, that led to the great extension of exporting areas in different parts of the world, and coincidently to a great reduction in price; and with this to a great reduction of area under wheat in the United Kingdom.

England's Home-Grown and Imported Wheat.—For the first 35 years of the period under review, 2½ bushels per acre on the average of the year have been deducted from the home crop for the seed of the next year; but for the next five years only two bushels per acre. Deducting this from the total crop produced, we get the quantity available for consumption. Adding the net imports of wheat (including flour as wheat on the basis of 72 pounds of the meal equaling 100 pounds of the grain), we have this exhibit:

AV. IN BU. FOR EIGHT YEAR PERIODS.	*For Consumption* (In Millions of bu.)			*Proportion or Per Cent.*	
	Domes	*Imp'd*	*Total.*	*Domes*	*Imp'd*
1852 to 1859.....	107	38	145	73	27
1860 to 1867.....	100	66	166	60	40
1868 to 1875.....	94	87	181	52	48
1876 to 1883.....	71	130	201	35	65
1884 to 1891.....	70	149	219	32	68
Forty years av.....	89	94	183	50	50

The Significance of the very great and rapid increase in the imports of wheat, the staple article of food of the population of the United Kingdom, is very marked. During the first eight yearly period, the English producer provided 73 per cent. of the total requirement; over the last eight years he provided only about 32 per cent. In other words, over the earlier period he provided nearly three-fourths, but over the later less than one-third of the total requirement. On the other hand, while over the first eight years imports supplied only about 27 per cent., over the last eight they supplied about 68 per cent. of the requirement. This was the case notwithstanding that the last eight yearly period gave a higher average yield per acre of the home crop than either of the four preceding periods. The fact is, that the less dependence on home, and the greater on foreign supplies, has been largely due to the increase of the population overcoming the capability of production, but, of course, largely also to the reduction of area under the wheat crops in the United Kingdom as a consequence of greatly increased production for export in other countries, and coincidently great increase in the English imports, and great reduction in price.

England Must Continue to Buy Wheat. With the rapid increase of population which has taken place in the United Kingdom, it is utterly impossible for that country to produce all the wheat required for consumption, and if the increase should continue, it will be in a greater degree impossible in the future. The area under wheat in the United Kingdom has, during the last eight years, averaged rather less than one-eighth of the total arable area; and to produce all the wheat required for consumption, more than one-third of the existing arable area would be required. If the area devoted to other rotation crops were to continue to bear about the same relation to that under wheat in recent years, the total arable area would have to be increased nearly threefold, making in all much more than the present total arable and grass areas put together. If wheat were to be grown on a larger proportion of the existing arable area it could only be by the exclusion of the growth of other grain crops and stock foods, which would then, in their turn, have to be imported in larger quantities, or live stock must be reduced, and the imports of live animals, dead meat, and dairy produce be very much increased.

Doubtless if the price of wheat were materially to recover, the area under the crop would again increase; but it is obvious that, with an annually increasing population and demand for sustenance, it is hopeless to suppose that England can supply from her home produce, even so large a proportion of the total amount required as during the earlier periods to which this enquiry relates.

Lost if I Do Not See It.—Although not a farmer, but a dentist, I always read the AMERICAN AGRICULTURIST, as I find a good deal in it to interest and instruct me. I would feel lost not to see it on my table.

DR. WM. BALL, New London Co., Conn.

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WALTER M. WOODRUFF, Wyandotte Co., Kan.

One Number Worth the Cost of Seven Years' Subscription.—I am very much pleased with the AMERICAN AGRICULTURIST, and have often gained enough information from one number to pay for all my subscriptions since 1887, when I first took it.

LEE JACOBS, Keith Co., Neb.

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Indications of Better Times.

There seems to be a general feeling of discouragement noticeable among farmers. The low prices prevailing make farming a hard business, and in order to make both ends meet, strict economy and good management are necessary. There is more demand for farm property this season than last. Several farms in this vicinity have recently changed hands. The price paid ranges from $35 to $50 per acre, the latter figure securing a first-class farm, well improved, with good buildings and everything in keeping. One such farm of 160 acres, close to a railroad station and post office, sold for $50 per acre, and the buyer went $8,000 in debt to get it. He is a large landowner, however, with a family of grown-up sons to help pay for it. He will, undoubtedly, come out all right unless unusually unfortunate. The only farmers who make more than a living are those who do not depend on hired help to work them. Where there are two or three boys, who are willing to stay at home and work together, everything is kept in the family, and a saving of several hundred dollars a year effected. Where there is but one man on a large farm, and the work is mostly done by hired help, the expense is increased.

The growing wheat is looking very well, yet little interest is manifested in it as the price is so low. The horse market does not improve; as a consequence, very few colts will be raised compared to former years. If such a thing is possible, the dairy business will soon be overdone at the present rate of increase. Every one seems to think that it is the only thing there is any money in at present. The principle crops on which the farmers depend for cash are wheat, oats, barley, rye, corn, potatoes, beans and hay. Hogs are also a general source of revenue, and as a rule pay well. Prices have not varied much through the winter. They are ruled very largely by the Chicago markets. The outlook for the year is better than last, taking it all around.

E. E. ROCKWOOD, Genesee Co., Mich.

Fattening Pigs on Wheat.—Where maize can be grown to perfection it will probably continue to be one of the chief food materials for fattening swine, but in colder climates other foods must be grown for this purpose. H. T. French of the Oregon station has continued the experiments (B. 20) of feeding wheat to pigs, and the results (B. 28) are especially interesting to farmers who find the market price of wheat about the same as that of corn. In the rate of gain produced, the results compare favorably with those obtained from feeding corn. Chopped wheat proved to be better than chopped oats, and there was 13½ pounds of gain for each bushel of wheat consumed. The quality of the meat was all that could be desired in fat pork. There was a good thickness of fat, and, at the same time a good distribution of lean meat. The pigs were eleven months old when slaughtered. The pigs were not in pasture at any time, but were in pens connected with small yards. They were fed twice each day, at eight in the morning, and at five in the evening. Each ration was weighed out, and allowed to soak until the time for the next feed. A handful of salt was added to each feeding, and charcoal was given to them twice a week. The breed was a cross of the Poland-China and Berkshire, with the Berkshire points predominating.

Cultivation as a Fertilizer for Wheat.—Experiments in wheat culture through five years, at the New York Cornell University station by I. P. Roberts (B. 61), indicate that on strong or clayey lands it is often more economical to secure available plant food by extra culture than by the purchase of fertility. In many strong wheat soils there is more plant food than the variety of wheat grown can utilize, though enough may not be available to produce a maximum crop. In changeable climates the wheat plant is so handicapped at times for want of suitable climatic conditions, that it is unable to appropriate much of the available plant food in the soil, and hence is not often benefited by additional nourishment. The wheat crops in the experiments proved unable to elaborate more food than the amount furnished by the soil under the superior culture given some of the plats. The fitting of the land for most crops is done so badly that under certain conditions even a moderate amount of manure or fertilizers may not only fail to increase the yield, but may be positively harmful to the wheat crop to which they are applied.

Sheltering Live Stock.

I was impressed by a remark made by a former officer of the Society for the Prevention of Cruelty to Animals. His statement was that over one-half of all the farmers in this State were constantly violating, in one form or another, the rules of that society, and were subject to prosecution. And from some observation along this line I believe he is not very wide of the mark. The number of people who give the comfort of their stock close and constant attention are altogether too few, even among the best of people. Not long ago I had occasion to leave my horse for a short time in the barn of a man who was considered a good citizen. To my utter surprise I found his horses shivering with the cold, his stable floor full of cracks and elevated above the ground. The stable walls were not bottomed. There were no mangers for feeding grain—simply threw it on the floor at the animals' feet. I left that place with not the slightest doubt of his being a radical advocate of perfect living, but, in putting it into practice, he had forgotten to apply it to the poor, honest, but not unfeeling, dumb animal under his charge. A farmer who will tie his horse in front of the grocery store on a stormy day, or leave them shivering in open stables as some, I am sorry to say, do, should be compelled to remain with them to realize what they suffer, and then, perhaps, he might wake up to the idea of kindness. There is a marked improvement along this line among our farmers, much to the satisfaction of the many who are humane to animals.

H. W. LITCHARD, Alleghany Co., N. Y.

Novel Binder Transport.

When the self-binder was first made, it weighed something over a ton and its transportation from place to place was to the farmer what the elephant is to a traveling circus. Its full width of thirteen or fourteen feet monopolized the wide roads and made it impossible to transport over the narrow ones. This state of affairs led to the adoption of the binder truck, by means of which the machine was transported sideways. This invention was considered a great boon to farmers, but the task of lifting the heavy machine onto the truck was always severe and unpleasant, if not actually dangerous. But recently an invention has been patented which does away with the binder truck altogether.

This device solves the problem of binder transportation by jointing the platform near the inner end, so that in a few minutes time the platform can be telescoped in such a way that the grain wheel is brought close to the foot of the elevators, and the machine runs on its own wheels. In this way the machine is narrowed so that it can go wherever a hay wagon could be driven—over narrow roads, narrow bridges and through gates. This, by reduction in width, also accomplishes a considerable saving of storage room.

This improvement, as far as we know, has been put out only by William Deering & Co. of Chicago. We believe they claim that they are protected by strong patents. Should it prove that they are not, the evident utility of this device will certainly lead to its adoption on all makes of harvesters. We are credibly informed that critical examination of a large number of these platforms that have been in use for three years has shown that the joint is the strongest part of the platform, and the tendency to sag that was predicted by the incredulous has steadily refused to show itself.

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Pear Culture in Texas.

The culture of the pear in the Gulf Coast Country of Texas is beginning to claim the attention of fruit growers both North and South. It is only in the last four or five years that it has been demonstrated that the Coast Country is so perfectly adapted to growing pears. It is thought now, however, by reliable fruit growers that the future will disclose the fact that it is second to no other section for pears, strawberries, plums, blackberries, dewberries, persimmons, pecans, and a number of other fruits and nuts.

The pear is propagated here altogether by cuttings. Land should be prepared as follows: Break the sod in the spring, pulverize it and replow, turning the sod under and sowing to some crop best adapted to the new soil, such as cotton, or sweet potatoes, which grow luxuriantly and seem to get the soil in better condition for fruit than any other crops. Sow cotton for a spring crop, and after that is harvested plant sweet potatoes or cabbage, which are two of the most profitable fall crops grown here. In the spring, one year from breaking the sod, plow again at least ten inches deep and ridge, and it is ready for cuttings or one-year-old rooted trees, as the planter may prefer to put out.

The LeConte and Kiefer are the only kinds that have been fruited here, consequently are the varieties most largely planted. There is no doubt, however, that Bartlett, Duchess, Howell, Clapp's Favorite, and Idaho pears will do equally well by grafting or budding on the more hardy and blight proof LeConte and Kiefer stock. LeConte is preferable, as it is most hardy and a stronger grower. Budding is also preferable to grafting, and is perhaps more easily and quickly done. When one desires to plant cuttings, it is best to use nothing but LeConte stock taken from bearing trees. Plant six or eight cuttings where a tree is wanted, say every fifteen feet in the row; and as fifty to seventy-five per cent. of cuttings grow, some four or five rooted trees will be obtained, when all but one—the strongest—can be taken up and put in nursery row, or elsewhere in prepared orchard ground. In this way the tree is left where it first starts to grow, and where the roots are never disturbed. The yearling trees are cut back at planting to within three or four buds from the base, and the second year one-half to two-thirds of the first year's growth of new wood is cut away to a symmetrical rounding head. It is well to manure the ground as much as possible with barnyard manure, put on the second spring before replowing, and plowed under. An annual dressing of barnyard manure until the trees come into bearing, and afterwards an addition of hard-wood ashes will be found highly beneficial.

G. W. HIBBS, Harris Co., Texas.

Cough in Horse and Cow.—James Thornton, Delaware Co., Md., has a horse that has been subject to a cough for a long time. The family cow was put in the next stall, and has lately begun to cough. The cough does not sound like that of the horse. It seems worse in the morning, and is a long, deep cough, that goes clear through her. It is a good plan to relieve the cough by feeding only well moistened hay. Bran and oats, moistened, in which a handful of linseed meal is added, with a tablespoonful each of salt and baking soda, may prove useful. The following is a valuable mixture: Fowler's solution of arsenic one ounce, extract of belladonna one dram, mixed together and added to the bran mash or slop at night. Powdered saltpeter in the feed or in the water, in ounce doses, once a day, will often give relief. The cough of the cow is suspicious. If she loses flesh after liberal feeding, you had better have a veterinarian test with tuberculin for tuberculosis. If not relieved by the above, give the horse a dram of chloroform, ten drams of alcohol, and one dram of extract of belladonna, in a pint of linseed gruel.

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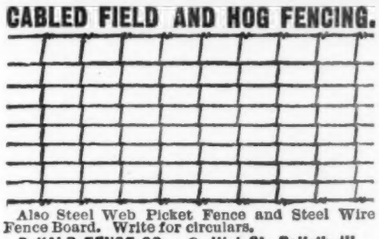

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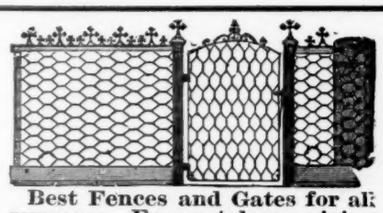

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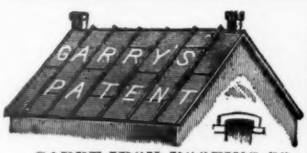

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In the Stock-Yard.

Sunstroke — Heat Stoke. — John Rich, Lincoln Co., Nev.: Sun stroke is a condition produced by exposure to excessive heat. There is a difference between heat exhaustion and heat stroke. Heat exhaustion results from long exposure to high temperature under severe physical exertion, and is followed by prostration, collapse, restlessness, and in severe cases by delirium. It effects persons working in close, hot, confined places, in steamships, furnaces, and at forges. In these cases the temperature of the body falls from two to four degrees below the normal temperature. Sunstroke or thermal fever, or heat stroke, occurs to persons and animals working in the sun. Soldiers marching in the sun, and working people exposed to the direct rays of the sun, and those who worry and hurry and drink freely of beer and whisky. Horses driven in the sun and hot streets at unreasonable and severe work are frequent subjects. Car horses, truck horses, and cruelly worked horses, and slaughter cattle, sheep, hogs, and dogs, strayed from their masters, suffer most. The dog is worried by every one it meets, as it approaches them to find its lost master, when from fear or mischief—thoughtlessness more than unkindness—fright is added to fright, and the poor brute, overcome at last by heat and the mad chase of a yelling rabble who cry mad dog, he either falls in a sunstroke or from a score of pistol shots. Soon after death, the body becomes stiff, and the putrefactive changes take place rapidly. The veins are filled with dark blood, those of the brain seem most engorged and fluid, the lungs are intensely congested, and rapid changes take place in the liver and kidneys. Paralysis is usually the immediate cause of death. A man may fall and die with heart failure, dyspnœa, and coma. Some fall and die as though felled by a heavy blow on the head, from a shock of general paralysis. The same occurs with animals. But usually in man —and doubtless also in animals—there is pain in the head, dizziness, a feeling of oppression, and often nausea and vomiting. The sight is impaired, and objects appeared colored. Diarrhœa, and frequent desire to void the urine occurs. Then partial and brief insensibility, or it may deepen into profound coma with heavy and slow breathing, the face is flushed or purple, (in animals the mucous membranes show these states) the skin hot, the temperature may range from 105° to 112°, of course there is unconsciousness, the breathing is labored and deep, or snoring. There is generally relaxation of the muscles, at others, twitchings or jerkings occur, the pupils, though at first dilated, become contracted. In fatal cases there is deep coma and a quick, feeble heart. Favorable signs are return to consciousness. Horses raise their heads, draw a deep breath and attempt to rise. The treatment in horses and other animals at first is to apply cold or ice water to the head, by pouring from a pitcher for a considerable time. If the skin is hot and dry, the whole body should be dashed with cold water. But in those cases where the skin is cold and the temperature is below natural, ammonia should be put to the nose and whisky given by the mouth if the animal can swallow, or by hypodermic injection if it cannot. Impart the system if below par, and reduce it if above par. Ice to the head and cold sponging to the body when the temperature is high, and stimulants and external heat, when the temperature is low. A week's rest will be required for man or beast.

Spasmodic Colic in Horses. — Jas. A. Davis, Washington Co., Va., has lost three valuable horses from what seemed to be spasmodic colic. They were attacked in each case very suddenly after about twenty minutes' exercise, and died in from eight to thirty hours. Oats cut and mixed with corn and cob meal, crushed and ground on a steel mill, had been used once a day as feed. At morning and noon they had been fed with corn and hay. The horses had been worked but little for some days, and were not overheated when fed. These horses were sacrificed to bad feeding. Coarse food is unsuited to the highly nervous organization of the stomach of the horse. Oats and sound wheat bran fed to horses seldom cause colic, unless some principle of feeding is violated, as large draughts of cold water while heated. Corncob meal and corn when wet and fed cause irritation from their coarseness, and while wet a fermentation is set up that is specially harmful to horses. The fact that the horses had been thus fed when idle for some days caused the accumulation of indigestible matters in the stomach, causing great pain on exercise. It was the pain that killed in eight hours, and inflammation and pain that caused death in thirty hours. Horses, especially, require digestible food; and all domestic animals do better on a reasonable variety of food. Though animals do not require so great a variety of food as man, yet a variety gives them a relish, and this maintains digestion and health. A safe, efficient and prompt remedy for spasmodic colic is two drams of oil of turpentine, one ounce of laudanum, and a pint of linseed oil, mixed and given as early in the attack as possible. Gentle exercise promotes the action of the bowels. Soap and water even as greatly aid the operation of physic when given freely, frequently and hot.

Indigestion.—M. C. Horner, Hudson Co., N. Y., has a handsome mare which throws up her head after standing in the stable for a day or two. Her whole body trembles and shakes. The spells last about five minutes, and occur once a week. At the time she seems unconscious. Feed bran mash at night, well salted, give but little hay, and that sprinkled an hour before feeding. Put four ounces of Glauber's salts in ground oats bran, with a tablespoonful of ground gentian, morning and noon. Every second day give in her feed bicarbonate of soda and powdered gentian, each half an ounce, with twenty grains of nux vomica, morning and noon. Groom thoroughly daily, with a stiff brush, and exercise two hours every day.

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Tobacco Caused Consumption.

No-To-Bac Cures the Tobacco Habit and Consumptive Gets Well.

TWO RIVERS, WIS., Feb. 2.—[Special.]—Great excitement and interest has been manifested in the recovery of an old-time resident of this town, Mr. Jos. Bunker, who has for several years been considered by all his friends a hopeless consumptive. Investigation shows that for over thirty-two years he used three and a half pounds of tobacco a week. A short time ago he was induced to try a tobacco-habit cure called "No-To-Bac." Talking about his miraculous recovery to-day he said: "Yes, I used No-To-Bac, and two boxes completely cured me. I thought, and so did all my friends, that I had consumption. Now they say, as you say, 'how healthy and strong you look, Joe' and whenever they ask me what cured my consumption, I tell them No-To-Bac. The last week I used tobacco I lost four pounds. The morning I began the use of No-To-Bac I weighed 127¼ pounds; to-day I weigh 169, a gain of 42½ pounds. I eat heartily and sleep well. Before I used No-To-Bac I was so nervous that when I went to drink I had to hold the glass in both hands. To-day my nerves are perfectly steady. Where did I get No-To-Bac? At the drug store. It is made by the Sterling Remedy Company, general western office, 45 Randolph St., Chicago, but I see by the printed matter that it is sold by all druggists—I know all druggists in this town keep it. I have recommended it to over one hundred people and do not know of a single failure to cure."

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Flies and Contagion.

During the recent cholera scare, public attention was frequently called to the dangers lurking in the feet and proboscis of the housefly, *Musca domestica*. Vomit and excreta are likely to be visited by these ravenous devourers of filth; the bacilli therein are sure to adhere to feet and proboscis, and the fly may pass on to a house where a meal is spread, which the fly will gladly join, and, in return for the unproffered bounty, contaminate the food with the bacilli adhering to it. My observations convince me that flies are frequently carried from Jersey City to Philadelphia, and further, in railway trains, especially in vestibule and parlor cars; I have noticed this also between Philadelphia and Atlantic City. So robust of wing is this creature, that it flies from the window against the fierce wind made by the train's speed, and after keeping pace with the car, easily regains its place in the coach.

A microscopic examination of the fly's legs, or its sucking apparatus, will always disclose some adherent, foreign matter, the parts being so formed as to hold minute particles. All have seen a fly poised on front and middle legs, rubbing its hinder pair together. This cleansing process rids

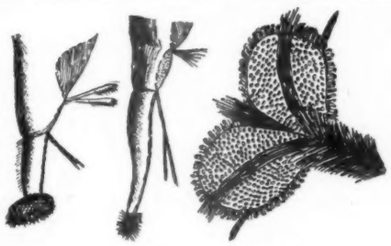

FIG. 1. FIG. 2. FIG. 3.

it of undesirable matter, and passes to its proboscis such tempting sweets as it finds thereon. It has well been called "Our tiny member of the board of health," for there is no doubt that it is the air's most active scavenger, and that the old homely adage, "A season without flies, and everybody dies," has a certain basis, in fact. The housefly certainly does rid us of a great mass of impure matter in the air, which we should be glad to be rid of. But, unfortunately, it has been most carelessly reared, and its manners are objectionable.

There is no more interesting study in minute life than that of a fly within some receptacle where its movements can be observed under a powerful lens, while it cleanses each leg in turn, then the sides and tip of its body, its head, and finally its proboscis, to the tip of which it passes the edible portion of its microscopic impediments. If to the lens be added a simple microphone, the sights and sounds will be a revelation never to be forgotten. The microphone multiplies the sound made by the rubbing of the fly's legs so that it resembles a carpenter rasping wood. That the fly is happy, will seem to be attested by its giving frequent vent to a sound akin to the neigh of a horse. The housefly can not bite, and all observations of blood poisoning based on its "bite" are probably due to the fact that it has a closely allied cousin, *Stomoxys calcitrans*, which many mistake for the commoner species. The housefly's proboscis terminates with a foot-like, bristle-covered pad, which can slightly roughen the human skin, but cannot possibly pierce it sufficiently to bring blood. *Stomoxys* has a dagger-like proboscis which it runs into human flesh up to the hilt, by one quick muscular exertion.

Physicians and entomologists are much divided among themselves as to whether flies may carry contagion. The oily bristles of the fly's foot which enable it to walk upon smooth surfaces, are capable of transporting just such objects as bacilli. Prof. Maddox finds that a bit of sugar, well saturated with a bacillated fluid, will be devoured by flies, which will be attacked with violent ejections in which bacilli will be found. On the other hand, Prof. Packard has written as follows: "It should be remembered that flies have an infancy as maggots, and the loathsome lives they lead as scavengers cleanses and purifies the August air and lowers the death rate of our cities and towns." Here is one of the many cases where doctors disagree, but in the face of much positive testimony against the fly as an infection carrier, it is hardly safe to listen to those who see in *Musca domestica* an alloyed blessing. Hence, as Prof. Ryder and others recommend, householders cannot be too careful in times of epidemic to see that these filth-laden visitors are kept out of their homes. Wire cloth, or mosquito netting, should close every door. Butchers and grocers should be especially cautious to exclude them, as far as possible, from their meats and vegetables. (The accompanying illustrations show in Fig. 1 the Proboscis of *Musca domestica* (housefly); in Fig. 2 the Proboscis of *Stomoxys calcitrans;* and in Fig 3 Foot of *Musca domestica*, all highly magnified.)

DR. EUGENE MURRAY AARON.

A Giant Seaweed.

Every one who has been upon our seacoasts has noticed the quantities of seaweed which grow on the rocks, float on the tide, or are cast upon the shore. The study of either the weeds or of the queer little animals which live in them is intensely interesting. Yet the seaweeds of our coasts are as apple trees to the giant trees of California when compared to the enormous kelp which is found all along the western coasts of both North and South America.

The stem of this kelp is round, slimy, smooth, and seldom so much as an inch in thickness, but it grows to a length of between three hundred and four hundred feet, and makes the parts of the sea where it grows, like immense forests which are filled with countless fish having either fins or shells, with crabs, sea eggs, starfish, and myriads of forms of life. No land forest begins to support so many living creatures.

This seaweed forest is as elastic as rubber and acts the part of a great cushion protecting the rocks from the fury of the waves, and sometimes saves ships from too hard contact with the stern rocks which line the shores.

Would Not Part With It at Any Price.—The AMERICAN AGRICULTURIST stands at the head of agricultural journals. No other publication covers the ground so thoroughly, and I would feel lost without it. A friend of mine has a set of it for nearly half a century, and he would not part with it at any price.

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TOPICS OF THE TIMES.

Farming at a Loss.

What business, agriculture excepted, can be carried on while products sell at less than cost? An apparent anomaly exists, prices decline, while production goes on, the farmer lives and seems to thrive. Sales fall below the estimate of cost, yet new crops are put in, harvested and sold, and the sheriff continues to absent himself.

Is the Estimate of Cost a reasonable and true one? It appears to be. If so, how can the farmer go on? One may reply that most farmers, with the help of their families, do their own work, and if prices go down, they simply accept lower compensation for their work. They take lower wages for their labor. They have the land, the buildings, the means of living, and cannot suddenly change occupation, and, if they did, could not expect to find so many privileges and perquisites with so small inevitable cash expenses. They must remain, take their chances for compensation of labor, and seek all available economies for equalizing cash and proceeds.

While This Appears to be a Satisfactory Explanation for this large class, how can we account for the persistence of hirers of farm labor, whose work is mostly done for wages, and relatively high wages? Is it fair to assume that they have been forced by the pressure of expenses upon income, to adopt closer business methods than most farmers, push their work with greater energy, relying upon brain rather than muscle, on promptness and commercial shrewdness in marketing? So far as this is true, profits accrue while others fail. Larger yields on improving soils will pay the extra cost of wages, and leave a margin. If a farmer's crop of wheat costs him $8 per acre, and he gets 12½ bushels, he must sell at 64 cents to recoup himself. Another may expend $10 per acre upon land richer and better prepared, and get 25 bushels per acre, costing only 40 cents per bushel. This margin of 24 cents will cover a multitude of slips in market prices.

The Hirer of Farm Labor who lacks such prerequisites for success in his business is always the one who is squeezed by the fall of prices. Many of this class have lately been caught between the millstone of falling value and the underlying one of inexorable cost. The result is disastrous.

There is a Difficulty in ascertaining the cost of production, which may account for some of the assumed difference between costs and proceeds. There is no point in agricultural statistics of greater difficulty. It might be said that the actual cost of a crop is as various as the number of farms. It depends on soil, season, culture, seed, amount of production, and many other causes. Interest is one of the items of cost, which often fails to appear in the items enumerated. Fertilizers, lasting through several crops, can with difficulty be apportioned to each. There is no greater cause of statistical and economic controversy than the balance-sheets of individual farms, made in an attempt to show the cost and profit of a crop. On these accounts it has been impossible to tell the actual cost of any crop of the United States. It may, with sufficient investigation, be approximated with some degree of reasonableness.

The Illinois State Board of Agriculture has estimated the cost of principal crops in each county for the past thirty-four years. In seventeen years a profit has been declared, and in seventeen a loss. In the past twelve years a profit is reported in only four. From 1860 to 1877 inclusive, there were ten seasons of profit and eight of loss, and the area went up from about four million acres to nearly nine. Since that date there has been seven seasons of profit and nine of loss; and the area has declined 28 per cent. During all this time the average net profit has been less than three million dollars per annum, and less than fifty cents per acre, amounting to scarcely four per cent. of the value of the product.

A Curious Result appears in these statistics. After six years of annual loss, amounting to about $69,000,000, the area was increased in the following year, 1888, about a third of a million acres, yielding a profit of $30,370,000, and the next year a small reduction of breadth followed, and a loss of $9,936,000. Three successive years of profit followed, attended by a short reduction of area.

Loss Has No Marked Effect in decreasing area, according to these statistics. It is a curious fact that the largest average yield, 40 bushels in 1862, resulted in a loss quite as large as that from the smallest yield, 18 bushels in 1874. It is true, however, that the average yield of all the years of loss was a little less than the average of all the years of profit.

The Largest Element of Chance in these results comes from fluctuations of price, resulting from the size of the crop, not merely in this State, but in the country at large. For instance, the average value per bushel was 23 cents in 1862 and 75 cents in 1864, the result of war demand, which made a profit of $59,745,000. "Necessity is the mother of invention;" and when the absolute need of cheaper production appears, the result is certain of attainment.

The Old Political Economy, which weighed and measured the productive powers of nature as a result of inexorable mathematics, is discarded by the developments of science and skill in practice of agriculture. It is shown that the best lands were not the first cultivated; that tangled swamps expensively prepared for cultivation are most productive and enduring; that the measure of production can be measured many fold by two-thirds of the aggregate of net profits for thirty-four years!

The Cost of Production of wheat in Illinois is assumed to have decreased from $10.50 per acre in in 1860 to $8.95 in 1893, or 15 per cent. Investigation leads to grave suspicions of inaccuracy in calculations of cost of production. We have not the data for exact figures or correct conclusions on the subject. It is easy to show how prices have declined. It is apparent also that there is a cheapening of the sort of production by many economies of management, by the utilization of invention in implements and mechanical appliances, in many cases by more intensive culture, higher fertilization and the taking of several crops per year, until the skillful, practical farmer can laugh to scorn the musty and melancholy assumptions of Malthus. There is an elasticity in the operations of agriculture, and the creative energies of nature are immeasurable. As changes in price and demand occur, the skill and genius of man, in coöperation with nature, can work wonders in new adaptations and larger results, making possible a profit from "farming at a loss."

Too Much Canned Corn.—The total amount of green corn packed last season in the United States and Canada far exceeded that of any previous year, over four million cases of cans being put up. Three and a half million cases were packed in 1892. The canner's associations are devising means to regulate the supply and demand, but apparently little can be done to overcome the prevailing low prices from the overproduction of last year. For fourteen years the *American Grocer* has collected the most reliable statistics obtainable concerning the amount of canned corn, and it states that while the high prices early last year encouraged the packers to increase the supply, and thus lower the market, it is altogether probable that the packers will regulate this summer's output so as to meet the present conditions, and hence the farmers who raise the corn for canning may not find a strong market for a large crop. Still the low prices may so stimulate consumption as to again call for a large crop at good prices. For seven years the New York markets have averaged highest prices during the winter months, being the lowest in the fall. At the close of 1893 the bulk of the crop was in the jobber's hands, though much has been sold during the winter.

American Beet Sugar.—The United States chemist, Dr. H. W. Wiley, has recently stated that the great obstacle to the spread of the beet-sugar industry in the United States is without doubt an agricultural one, the cost of farm labor. The National and State experiments, and the practical workings of the seven active beet-sugar factories in the United States, have demonstrated beyond a doubt, the fact that beets of a good sugar content, can be grown in many places, and with yields and total quantity approximating those produced in the famous beet fields of Europe. The beet-sugar output of the United States sugar factories has been as follows: Six hundred thousand pounds in 1887; four million pounds in 1888; six millions in 1889; eight millions in 1890; twelve millions in 1891; twenty-seven millions in 1892; and forty-five millions in 1893. Nearly two million dollars are invested in the seven United States beet-sugar factories which are located at Alameda, Chino and Watsonville, California; Grand Island and Norfolk, Nebraska; Logan, Utah; and Staunton, Virginia. These factories can procure beets from twenty-four thousand acres of the richest farming land, but the beets were grown on a much smaller acreage, at an average cost of $40 per acre. Over two hundred thousand tons of beets were bought from the farmers last year for $900,000, or an average of $4.50 per ton. Forty-four thousand pounds of sugar was made, worth three cents per pound, or $1,320,000 in all. A bounty of nearly two cents per pound added $860,000, so that the total money receipts of the factories, were over two million dollars. Though the conditions of manufacture are unfavorable in some localities, yet considering the United States as a whole, all the conditions of sugar making, including the quantity and cost of fuel, of winter storage, and the other active factors in fixing the cost of production, are as favorable here as in Europe. The cost of labor, however, is only one-half, often one-third, of its cost in America, and the cost of farm labor is a very important factor in the growing of beets for such prices as will permit the profitable extraction of sugar from them.

Business Methods in Farming.—Every crop planted on the farm, every animal bought, and every man hired is an investment, involving sound business judgment, in both the planning and the management, to insure a profitable outcome. Too often crops are planted, or stock raised, simply because other farmers raise them, without regard to the cost, the market, or the adaptability to the particular farm and its equipment. When planted, no account is kept of the expense, and not even an estimate is made of the cost, but the crop is sold as soon as harvested for what it will bring and the crop repeated the next season. While it would sometimes cost more than the crops were worth to keep a detailed set of accounts with each crop, still a simple businesslike set of farm accounts will furnish the data whereby the profitableness of particular crops, or stock, may be closely estimated, and thus furnish a safer basis than guess-work for the abandonment of the crop, or for changing its treatment. Many parts of the estimates made for one year or field, would answer for other years and fields. Whether accounts are kept with particular fields or crops or not, there should be an account opened with the farm, and others with household and personal expenses. By taking stock each year, it can be determined whether the farm has been profitable; whether the improvements have exceeded the repairs; whether personal pleasures have been too extravagant, and whether the household department has been economically carried on. Of course there should be an account for every person with whom a credit business is transacted, for every one admits that memory utterly fails in keeping an accurate record of such transactions. Treat the farm as a person and see whether it can be credited with a fair balance of profit every new year. If farming is a business, then the keeping of farm accounts will pay.

Tuberculosis and the State.—That there naturally devolves upon the State government the most effective and economical measures for the suppression of tuberculosis in farm animals is the belief of Dr. James Law, of the New York Cornell University agricultural experiment station. State interference will not, however, relieve the stockowner from the personal duty of using all feasible means of prevention. He recommends that farm animals should be slaughtered for human food only in municipal slaughter houses. All dressed, salted and canned meats, which have not favorably passed a careful government inspection at the time of slaughter, should be excluded from the home market. The federal government should stamp and label all canned meats which pass the municipal inspection, and which can be guaranteed as coming from non-tubercular animals. Pigs, fowls or other animals should not be fed on milk from tuberculous animals, nor on the offal or other products of slaughter houses, until such food has been boiled for at least one hour. All dairy herds, and especially such as furnish milk for immediate use as human food, should be systematically inspected by skilled and reliable veterinary practitioners. When tuberculous cattle or other animals are found on a farm, the other animals should be tested with tuberculin, and all cattle found affected should be appraised and killed without delay and paid for by the State. As tuberculin contains only certain products of a

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pure culture of the *Bacillus tuberculosis*, and not the bacilli themselves, there is no danger of inoculating healthy animals, if the injecting needle be sterilized for each animal. The State should employ and pay a special disinfecting corps to thoroughly disinfect all contaminated premises and objects. The municipal health officer should examine for tuberculosis any attendants on cattle or other meat-producing animals, who show any chronic disease of the air passages, lungs or bowels. They must not be allowed to continue this occupation if found to be tuberculous. Tested herds should be re-examined whenever untested animals are introduced. The government veterinary inspector of the district should receive reports of all deaths in inspected and attested herds, and make a careful post-mortem examination. The whole herd should be again tested with tuberculin, if tuberculosis in any form is found. If these measures were carried out, the awful number of human deaths from consumption would be made much smaller.

Squashes, Melons and Cucumbers Do Not Mix.—Many persons still cling to the former belief that pumpkins and melons will mix. According to L. H. Pammel of the Iowa station (B. 23) this is partly caused by the confusion of the species in the popular naming. The winter squash is *Cucurbita maxima*, represented by the Hubbard, Mammoth, Chili, Marblehead, Turban and other varieties. The pumpkin and the summer squash are the same species, *Cucurbita pepo*, represented by the Cow, Sugar, Vegetable Marrow, Long, Warted, Summer Crookneck, Bush Scalloped, and other varieties. The watermelon, citron and pie melon are the same species, *Citrullus vulgaris*. The muskmelons and cantaloupes are *Cucumis melo*. The attempted cross-pollenizing experiments show that pumpkins, *Cucurbita pepo*, will not hybridize with the true squashes, *Cucurbita maxima*. Pumpkins will not mix with watermelons, *Citrullus vulgaris*, nor will squashes and melons mix. Cucumbers, *Cucumis sativus*, and muskmelons will not mix with each other, nor with pumpkins. The different forms of the true squash, *Cucurbita maxima*, will readily cross with each other. The forms of *Cucurbita pepo*, which include the various pumpkins and summer squashes, will readily mix with each other. The hermaphrodite flowers of muskmelon are self-impotent, and this is true also of some squashes. Certain varieties are prepotent, as shown in character of fruit, vine and leaf. It is, however, often not well defined, both parents equally transmitting the qualities.

The Cotton Industry of Egypt is expected to receive a new impulse from the establishment of an extensive cotton mill in Cairo. Egyptian cotton is of excellent quality, and can be delivered at low rates in Cairo. The Egyptian workmen are clever and easily taught, and the supply of suitable labor is ample. In addition to the cost of freight and forwarding expenses on all goods coming into Egypt from Europe, there is a duty of about eight per cent. *ad valorem* payable on all imported goods. These charges will be saved on the homemade production, as well as the original one per cent. paid on the cotton when it was shipped from Egypt. This saving, coupled with the suitability of the climate and the abundance of good labor, furnishes evidence of the practicability of the undertaking.

Spasmodic Colic.—S. S. Guernsey, White Co. Ind., wishes a remedy for spasmodic colic in animals that he can always keep on hand, as he has a number of work horses which occasionally have the trouble. The following remedy can be kept on hand, in a well-topped bottle, for immediate use. Chloroform, laudanum, sulphuric ether, each two ounces, linseed oil one pint. Give one-half for a dose, after shaking well. Great care should be observed in feeding horses liable to colic. Sound and digestible food should be given, and the chill should be taken from the drinking water, and never given when the horse is warm or tired.

Wants It Continued for Life.—I will continue to take the AMERICAN AGRICULTURIST as long as I live, if it continues as good as it now is.

FRED BALLARD, Anoka Co., Minn.

Another N. J. Miracle

A Story From New Jersey Which Will Interest Everyone.

A MAN WHO WAS CURED OF RHEUMATISM AND PARALYSIS AFTER SUFFERING FOR TWENTY-SIX YEARS.

(From the Philadelphia Record.)

A very interesting story comes from Cape May C. H., N. J. The chief character in the story is John L. Steel, who has lived in that town for thirty years, and is one of the best known men in Cape May County. To a reporter, Mr. Steel said: "Certainly, I'll tell you the story. I am 54 years old and was first attacked with the rheumatism twenty-six years ago. I suffered all that mortal man could stand. The medicine and the doctoring I have had has cost me at the very least $2,500, but they were all like so much water in my case.

"One day, in 1882, I was taken with a chill up and down the back, my leg gave out at the knee and I fell like a log. Never shall I forget the agony I suffered. I thought I would go crazy. I could not walk, and my legs were all drawn up at the knee and felt as if dead. It was without feeling and without power. I called in Dr. Alexander Young, one of our town physicians. He cupped and blistered me without success. I went to Dr. Downs, a physician of the old school. Dr. Downs took my leg and pulled it out straight, then he laid it over the arm of the sofa on which I was reclining, and from it suspended two bricks. The pain was almost unbearable. The battery was applied, and the result was that I was just as bad as ever. As a last resource I went to the late Dr. Pancoast, then of Jefferson College. He pronounced my case chronic rheumatism, and said that he could relieve the pain but could not cure me. He gave me sarsaparilla and iodide of potassium, of which I had already taken a quantity. I felt that I was going from bad to worse. The pains were growing more intense, my body was growing weaker and I had to crawl up stairs on my hands and knees. I was as white as a sheet, and at times nearly frozen to death. I slept under enough covering to crush me, and was cold then. I had to lift my leg around wherever I wanted it, but at night it would twitch and jerk as though possessed by some fiendish power.

"Well, to cut a long story short, I read in the *Philadelphia Record* of a man who had been cured by Dr. Williams' Pink Pills for Pale People. The story appeared to be an authentic account, and with a ray of hope I sent for two boxes of Pink Pills. This was about six months ago. As soon as I began to take them they began to do me good. I felt as though I had been given fresh blood and new muscles. When the two boxes were finished I sent for six more, and under this treatment continued to improve. I began to regain the use of my limbs and I could soon get around with the aid of a crutch and cane. Now I have discarded the crutch. I have an excellent appetite and feel first class all over.

"Why Pink Pills have done more for me than all the rest of the medicine and doctors put together, and my recovery is due solely to them. I have taken in all twenty boxes of Pink Pills and you can see for yourself what they have accomplished."

Suiting the action to the words Mr. Steel placed his cane over his shoulder and walked off like a man who had never had an hour's sickness in his life. Some idea of the severity of his case can be had from the fact that his left leg has been shortened nearly an inch by the ravages of the disease. The following affidavit was made before John Spalding, Justice of the Peace, who has known Mr. Steel during his entire illness.

Sworn and subscribed before me this 26th day of May, A. D. 1893.

JOHN SPALDING,
Justice of the Peace.

Dr. Williams' Pink Pills are not a patent medicine in the sense that name implies. They were first compounded as a prescription, and used as such in general practice by an eminent physician. So great was their efficacy that it was deemed wise to place them within the reach of all. They are now manufactured by the Dr. Williams' Medicine Company, Schenectady, N. Y., and Brockville, Ont., and are sold in boxes (never in loose form by the dozen or hundred, and the public are cautioned against numerous imitations sold in this shape) at 50 cents a box, or six boxes for $2.50, and may be had of all druggists or direct by mail from Dr. Williams' Medicine Co. from either address. The price at which these pills are sold makes a course of treatment inexpensive as compared with other remedies or medical treatment.

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Guaranteed Tobacco Habit **CURE.**

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New scientific invention, entirely different in construction from all other devices. Assist the deaf when all other devices fail, and where medical skill has given no relief. They are safe, comfortable and invisible; have no wire or string attachment. Write for pamphlet. *Mention this paper.*

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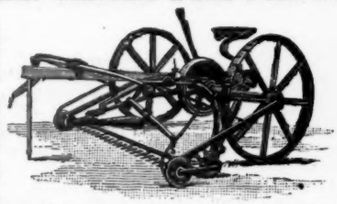

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Is guaranteed to be the only successful wide cut mower on earth. No side draft. Cutter bar supported at both ends. All the objections to other machines of this class positively overcome. Write us for descriptive circulars.

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MANN'S GREEN BONE CUTTER will make **HENS LAY.** Catalog free.
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25c. for a Poultry Book on Caponizing free. Send for Cat.
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MATTERS OF BUSINESS.

Where Are We Drifting?

Under the above heading we have been favored with the following suggestive communication from Mr. Michael McEnnis, St. Louis, Mo., the publication of which does not necessarily mean that all his views are indorsed by the AMERICAN AGRICULTURIST.

An easy question to ask, but hard to answer. In the face of declining values of grain, flour, cotton, hog products, and most every article of American production, to which may be added bonds, securities and silver bullion, and the only effort to stop these declines is in the direction of reducing production, economizing expenses, and inventing machines to take the place of labor. Is there no way of curing this disease of destroying values? Have our financiers lost their art? Have we no commercial giants who can look over the world and find some vent for our productions? Has the old American pluck of hunting up buyers, or people that will exchange their products with us, on a paying basis, been lost? Have we degenerated into passive machines, without brains, at the very moment when energy and enterprise would make the United States the commercial master of the world? No intelligent merchant who keeps himself posted, but is aware that one-half, at least, of the world actually wants and needs our productions. Have we no statesmen broad enough to grasp the situation, to propose and carry into execution such laws as will untrammel commerce, and drive out all impediments to the free exercise of the law of supply and demand.

The most notable of these impediments are, in my judgment, "option sales of American products by non-owners." The tariff laws, which prevent and discourage the building or ownership of seagoing vessels, and force the commerce of the United States to pay an enormous tribute to foreign vessels for the privilege of transporting under the flag and protection of European government, and, lastly, the demonetization of silver.

Would not movements in the direction indicated result in better and more lasting success than the cowardly and unwise policy of reducing production? Reducing our assets and placing ourselves in a position that would destroy our ability to either pay our debts, give employment to our laborers, or to hold our own among the nations of the globe.

Suppose the planters conclude to reduce the production of cotton one-half, making that article so scarce that Egypt and the new fields now being opened in Africa should turn their attention to producing cotton with their cheap labor, and, if successful, would they not become permanent competitors for all time, even to shipping their cotton to our own cotton mills. What then? No more cotton planting in this country; no more gold or exchange to meet our balances in Europe.

Suppose cotton farmers grow food products for their own use so as to be independent of the West and Northwest. What then? The derangement of internal commerce; no freight for rail or boat; no employment for the mass and half a million of men, at least, turned into tramps. Suppose in the face of this curtailment of demand for Western products the farmers would conclude to stop raising more than they needed for their own use. Where are the great mass of the people who do not produce food to get their supplies? With no money or work, what would land be worth? What would our public securities bring? How much money would there be in circulation? In fact, would not general repudiation be the rule; would not anarchy be the result. This line of thought does not suit the writer, and he prefers to take the following:

There is no overproduction in the United States, but there is a considerable "short production" of good, common sense. What we want is an American policy to take care of the 65 millions we have now, and the probable increase of 35 millions more within the next thirty years, and that policy should start out with:

1. Free coinage of silver at the approximate value of gold, even if the dollar is made much larger with more silver in it. This dollar should be absolutely a legal tender for debts and exchanges.

2. Commercial laws that will protect the producers and owners from the piracy of illegitimate competition by non-owners (option dealers).

3. Free ships under the flag and control of the United States.

4. Reciprocal or free trade with the nations of the world that will exchange their products for ours on fair and equal terms, particularly in food and fiber productions, not otherwise.

With such laws and more enterprise in pushing our productions all over the world, this country would soon have use for all we could produce, and in place of the cry of "over-production," we would be forced to double our producing powers, and owners of cotton, grain, flour, etc., would have confidence and ability enough to carry their own property themselves, and not be under the necessity of "hedging," or abdicating their rights in favor of irresponsible option gamblers in the "pits" of the general exchanges.

The movement to curtail and reduce the production of any of the articles named in this essay is unsound, unwise, and must lead to disaster. It is cowardly also to lie down and not use the remedies in our hands. If necessary, let us force the consumption of our products on the nations of the earth, and assert the ability of the United States to not only furnish the food but the raiment of the world.

Personal, Commercial and Agricultural.

Four Barren Mares. — "I had four barren mares," writes G. W. Justinson, of E. Palestine, Ohio, "that got in foal by using the Perfect Impregnator, bought of Spec. Mfg. Co., Carrollton, Mo." See advertisement on Page 287.

A Salary, with expenses paid, will come handy to anyone who is now out of employment, especially where no previous experience is required to get the position. If you want a position, read advertisement on Page 295, headed "A Chance to Make Money."

Works to a Charm.—This is the testimony of a large number of poultry raisers who are using the famous Friend Junior Incubator, manufactured by S. Howard Merryman, Bosely, Md., who will be glad to send his descriptive circular to all readers of the AMERICAN AGRICULTURIST, who will apply for it.

Increasing Demand for Steel Roofing. — The Garry Iron & Steel Roofing Co., of Cleveland, Ohio, inform us that they have made quite extensive changes in their plant, adding new machinery, etc., hoping that with extra effort they may be able to secure a fair amount of business the coming season.

Police on Bicycles.—The Park Commissioners of Boston have decided to equip the park police with bicycles, believing that they will be of great value in covering the great amount of territory required to be patrolled. An order for Columbia bicycles has been placed with the Pope Manufacturing Company.

The Advertiser's Handy Guide is an exceedingly useful book, published by Bates & Morse, Advertising Agency, New York. Within its 766 pages are given all the desirable features of arrangement, statistics of circulation of all the prominent dailies and weeklies, and the grouping of special publications. All the details involved have been carefully revised, and the publishers believe they can be depended upon.

The Things You Need Most—sit on—eat on—sleep on—lounge on—work on—oughtn't to cost you any more than they cost the retailer. Good furniture at 'way-down prices can be bought of the L. Fish Furniture Co., 1,901 to 1,911 State St., Chicago. This firm does such an enormous business that they can afford to make but a small profit on every sale. They publish a great catalogue full of styles and prices, which will enable you to decide just what you want. Write to them for it—it's free.

Ornamental Fencing.—The Cleaveland Fence Co., Indianapolis, Ind., manufacturers of fencing for lawn, field and park, has, for many years, held an enviable reputation for the simplicity, durability and originality and beauty of design of their various fences. How much ingenuity is represented in their fencing may be inferred by the fact that it is protected by eighteen patents issued at various times. A very neat little catalogue, giving illustrations and descriptions of their various styles of fences, has just been issued by the company, and any readers of the AMERICAN AGRICULTURIST contemplating building a fence will find it to their advantage to write for it.

An Avalanche of Praise. — The Page Woven Wire Fence Co., of Adrian, Mich., appears to be completely overwhelmed with favorable comments about their fences. A. L. Wolfe, Malvern, Ia., writes them as follows: "I am well pleased with Page's woven wire fence, as it seems to turn everything that comes in contact with it, even to cats, and the ornamental fence can't be beat for looks, price or durability. I can recommend the Page to those going to put up fence, knowing they will get a good one, and that it will suit in every respect."

The Profitable Cream Separator.—The hard times through which we are passing are demonstrating that dairying is one of the most profitable farm industries. The returns from the dairy are nearly always cash, which is very convenient in a close money season. The users of the cream separator, made by the De Laval Company, of Poughkeepsie, find that their savings from the separator are so great as to earn the cost of the machine nearly every year, and that it is the best investment they could make in connection with their dairy. Some say that with ten or fifteen cows the separator makes as much difference as would the addition of two or three cows, while it costs much less to keep.

Improvement in Separators.—With the wonderful improvements in dairying which have been developed in recent years, the time is at hand when no dairyman with ten cows or more can afford not to avail himself of the use of the best apparatus. The Davis hand separator will skim three hundred pounds of milk per hour, and is guaranteed to skim as close as any separator on the market. It has many improvements over the old style machines which reduce the amount of work in keeping it clean to the minimum. Its manufacturers, the Davis and Rankin Building and Manufacturing Co., Chicago, Ill., will mail a copy of their descriptive catalogue to any readers of the AMERICAN AGRICULTURIST who may apply for it.

Three Beautiful Etchings.—The latest additions to the famous "Four-Track Series" Etchings, issued by the Passenger Department of the New York Central, consist of three beautiful and highly interesting views, entitled respectively: No. 6. "The Empire State Express"—Fastest Train in the World—from a photo by Yates, of Syracuse, taken while the train was running over sixty miles an hour. No. 7. "Horseshoe Fall, Niagara," from a photo by Jackson, of Denver. Probably the grandest and most realistic picture ever made. No. 8. "Gorge of the Niagara River," from a photo by Jackson, of Denver. A beautiful view of one of the most wonderful features of Niagara. The titles of the other five etchings comprising the series are: "Washington Bridge," "Rock of Ages, Niagara Falls," "Old Spring at West Point," "999 and the DeWitt Clinton," and "Rounding the Nose, Mohawk Valley." These etchings are all printed on fine plate paper, 24x32 inches, suitable for framing. A copy of any one of them will be mailed in a stiff tube, secure from injury, to any address, for 75 cents, by George H. Daniels, General Passenger Agent, Grand Central Station, New York.

New York Berkshires.—The New York breeders of Berkshire swine are making preparations for the largest and best exhibit of Berkshire swine at the 1894 State fair that has ever been seen. The American Berkshire Association has agreed to aid breeders in this matter by the offer of the following liberal premiums, valued at fifty dollars, for exhibits of Berkshires made at State fairs next fall: The first five of the second five volumes of the Record of the American Berkshire Association necessary to complete the set of the successful competitor, and valued at five dollars per volume. 1. Best breeding pen of Berkshires registered in the American Berkshire Record, to consist of a boar and three sows over one year of age, owned by a resident of the State or Province in which the fair is held, the first five or the second five volumes of the Berkshire Record, valued at twenty-five dollars. 2. Best breeding pen of Berkshires registered in the American Berkshire Record, to consist of a boar and three sows under one year of age, owned by a resident of the State or Province in which the fair is held, the first five or the second five volumes of the Berkshire Record, valued at twenty-five dollars. The conditions are: First, that the boars and sows competing for the prizes specified above be recorded in the American Berkshire Record prior to date of entry at the fair, and that a list of such entries be sent to the Secretary of this Association. Second, that there shall be not less than two competitors for each of the prizes. Third, that no animal competing for the above prizes will be allowed to show for said premiums at more than one State or Provincial fair in 1894. All the breeders of Berkshires in New York are earnestly requested to make an exhibit at the next fair for one or both of the premiums named above, which, with the regular cash premiums offered by the State Fair Association, should ensure a great show of Berkshires at the fair next fall. The vice-president is R. P. Metcalf, East Elma, N. Y.

On the Mountains in India.

Our party found it much pleasanter to look up to the clouds or down upon them, than to be in their watery midst when climbing the Himalayas. Nothing can exceed in loveliness the sight of the downy, fleecy, billowy cloud in the valley just beneath us. We certainly see its silver lining then, the sheen of silver is very apparent. Frequently along our way would we pass oddly constructed stone houses; upon inquiry we found them to be stopping places for the native mail carriers. One of these men swiftly runs for two miles, at the end of which distance another awaits him, who, quickly taking the bag, begins his portion and has soon reached his "two-mile house," where a third awaits him, and so on. Our coolies must needs stop every few hours to rest and smoke the hookah. Selecting a romantic spot, we ourselves would rest our cramped limbs by walking around and exploring Nature's wondrous works. We would eat our lunch seated upon stones or lounging upon the mossy knoll on the banks of a foaming mountain stream. Looking up we perceive hugely carved facades, whose rugged battlements tower hundreds of feet overhead against a sky of blue. Looking down we note the wierd cañons, while under our very feet are tiny ferns and mosses sheltered by immense ferns of different species, which stand as sentinels protecting their wee sisters. Upon our alcohol lamp could we prepare India tea, London cocoa, and Baltimore oysters; or, if desirable, eat the canned beef from Chicago. Our dessert would sometimes be the delicious native fruits, again the canned varieties from California, upon which we would use cream from Switzerland. This caused the world to seem not so large after all. We were not "far from home."

Reaching Epworth we at once declared "'Tis the most beautiful spot on earth; surely sin, sorrow or suffering cannot long find an abiding place here." And during our stay there our time was fraught with unalloyed happiness. Within three miles of us, however, was one of the saddest spots on earth, a leper asylum, for leprosy is common in India. In this leper home, there is death in life; life with all of its sorrows, but few of its joys; death ten thousand fold more terrible, because so long drawn out. Hinduism does little for these poor, unfortunate lepers; Christianity much. The climate here is delightful, and fruits and flowers abound. All around Epworth are native villages, but we do not see them unless we go on exploring expeditions. We need see no natives but our servants if we so desire. This in itself is restful. If such a thing be possible, the women are treated worse by the mountaineers than their sisters are by the men on "the plains." They are bought and sold like cattle. They do all the hard farm work, are clothed in rags, and scarcely get enough to eat. Should a mountaineer be asked aught in regard to his possessions, in answer he will tell the amount of land he owns, the number of cattle and wives. Women are often sold for debt or thrown in with a purchase of land. These people are exceedingly superstitious, and most hideous practices are indulged in on this account. Their most important god is the monkey. Temples dedicated to these animals are often seen on the distant peaks, and it was only after much arduous climbing, that we were enabled to see the inside of one of these little, square rooms. Nothing was within save a stone monkey god.

E. B. SIMMONS, Epworth, India.

Wants It As Long As He Lives.—I cannot do without the AMERICAN AGRICULTURIST. I read it before I went to the war and coming home minus a right arm I took it again, as I want to keep posted about the progress in agriculture. For this reason I want to have the paper as long as I live.

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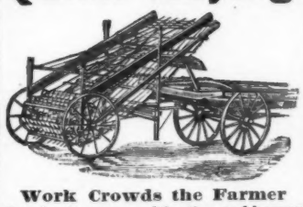

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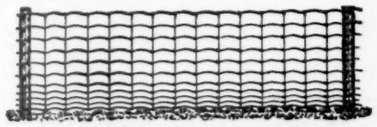

"DO YOU SEE THAT HUMP?"
Not on "The Page," it never has 'em, but on that dead wire fence. It was caused by an animal running into it. The animal "didn't mean to." The fence "couldn't help it," but the hump is there and it is an eye sore to the owner. He looks across the road at his neighbor's non-humpable, anti-sagable, Page fence and admits that Elasticity "is in it" after all.
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FARMING IN FOREIGN LANDS.

The great shire stallion, Lincolnshire Lad II, has become the property of Mr. Fred Crisp, of the New Southgate stud farm, England. Some of the best shire horses in the United States are of the blood of this sire.

From France it is reported that increased attention is given to swine breeding and feeding, special efforts being directed to the production of a larger proportion of lean meat than was formerly regarded as desirable.

The renowned herd of Shorthorn cattle bred by the late Earl of Bective, at Underley Hall, England, is to be sold at auction July 12th. The herd comprises about sixty cows and heifers, and fifteen bulls, bred from the choicest Bates stock to be found in England and the United States.

A great deal of interest is manifested in Victoria, Australia, concerning beet-root sugar, and the Department of Agriculture has issued a document containing information on the subject. It is thought that nearly all the southern parts of the province are adapted to the growth of sugar beets.

Angora goat breeding has proved eminently successful in South Africa. The fleeces bring good prices, and the flesh is in active demand. The Angora goats stand the drouths well, and are exempt from many ailments which attack the Boer goat. They fatten readily, and are fit for slaughter at two years old.

The West Indian Island of St. Vincent has become the principal center of arrowroot culture. The exports of arrowroot from the island grew from 15,458 barrels in 1888, to 23,433 barrels in 1892. This rapid increase of production was induced principally by the enhancement in the price of the prepared product.

Farmers in Tasmania and Eastern Australia frequently turn up with the plow a substance that resembles a potato, but is, in reality, a species of *Polyporus* fungus. It is allied to the Tuckahoe or Indian bread found in the United States, but, unlike its American congener, has no value as food, being insipid and indigestible.

The government of Japan and public men interested in its industries, are paying much attention to the subject of cane-sugar production. The annual consumption of sugar in Japan amounts to 120,000,000 pounds, only one-half of which is supplied by the native manufacturers, though many places in the islands are well adapted to the successful culture of sugar cane, or sugar beets.

An exhibition of Russian horses is to be held in Paris some time in the coming summer. The Municipal Council of Paris has undertaken to provide a site for the show, which will include not only horses, but also camels, with Cossacks, Turcomans and Mingrelians, the two last named, coming from the region which is supposed to be the original habitat of the equine species.

The "wheat king" of Argentina is an Italian immigrant named Guazone, and he conducts the business on a scale in comparison with which, American "Bonanza farming" seems almost insignificant. Last season his wheat crop occupied an area of 66,720 acres, or 104¼ square miles, and loaded 3,500 railway cars. His workmen are numbered by thousands, all of whom work on shares.

Tea growing has become an important and rapidly increasing industry in India and Ceylon. The Indian crop for 1893 was the largest ever produced there, exceeding by twelve million pounds that of the preceding year. The total crop of Ceylon was larger by eight million pounds than that of 1892, the combined crops supplying an increase of twenty million pounds over any previous crop.

The General Secretary of the Bureau of Agriculture of South Australia reports as follows in relation to the new forage plant: "*Lathyrus silvestris* appears to thrive much better in countries where there is a good rainfall, than where it is limited to 21 inches or less. In South Australia no favorable reports have been as yet recorded, although we have been experimenting with it nearly five years."

A leading agricultural industry in Dalmatia is the cultivation of the *Chrysanthemum cinerariæfolium*, from the dried flowers of which the so-called Dalmatian insect powder is made. Trieste is the market from which these flowers are distributed to the average annual value of $200,000 to $250,000. The plant is also cultivated in California, Australia and South Africa, but nowhere on as large a scale as in Dalmatia.

The discovery of phylloxera in a vineyard in the Bendigo district has created consternation in that and other parts of Australia. It is a threatening menace to the vine-growing and wine-making industries, which have attained much importance in many of the Australasian colonies. This is not the first appearance of the pest in that region. More than fifteen years of efforts were required to eradicate it from the Geelong district.

A sewage farm of fourteen hundred acres is owned and worked by the city corporation of Birmingham, England. The farm receives the sewage of the city, the population of which is 650,000, and immense crops of potatoes, turnips and other vegetables are raised yearly, besides grass and other forage for the large herds of dairy cows and fattening cattle, sheep and swine. The sales of vegetable and animal products of the farm amount to one hundred thousand dollars per year.

Superficial methods of agriculture prevail in other newly-settled regions than those of the United States. The *Leader*, of Melbourne, Aus., says: "The bane of Victorian agriculture consists mainly in the belief held by many that success means 'scratching' in a big area of wheat anyhow, and then going into the storekeeper's books for the rest of the year on the off chance that they may get a crop. If they do not get a crop they are ruined, and, as a rule, they do not get a crop."

The government of Victoria, Australia, has pursued a very liberal policy in giving bounties for the encouragement of various agricultural industries. Under the influence of the bonus for export butter, the trade grew to large and profitable dimensions. Similar bounties have since been offered for export cheese, fruits and honey, and a considerable sum has been set aside to develop the wine industry by cash loans for the purpose of aiding in constructing wine cellars, stills, etc.

Artesian wells are causing great changes in the agricultural prospects of Queensland, Australia, and New South Wales. Large tracts which have hitherto been liable to occasional disastrous drouths have become valuable for pastoral and agricultural purposes, since the hidden reservoirs have been tapped by artesian wells. A single investment company has expended about $150,000 in this way, and obtained over eight million gallons of water per day. So abundant is the supply that 30,000,000 gallons daily are allowed to run to waste.

Vanilla culture forms a considerable item in the rural industry of some sections of the State of Vera Cruz, Mexico. The vanilla plant, which is an orchid, grows wild on the seacoast slope of Vera Cruz, but in the two cantons referred to, the long stem attaches itself to trees and draws very little nourishment from them. The seed vessel is a pod six to twelve inches long, dark green at first, but turning yellow as it ripens. The dried pod furnishes the vanilla of commerce. Several varieties of vanilla are known, but only one, the Mansa, is cultivated.

Says the *North British Agriculturist:* "The prevalence of tuberculosis in cattle is becoming a most serious matter to stockowners, butchers, and live stock salesmen. So prevalent has this dire disease become in the north of Scotland, that the butchers have boycotted a number of auction marts at which the salesmen have declined to make good the loss which the butchers have sustained through the purchase of apparently healthy cattle, which, on being slaughtered, were found to be affected with tuberculosis, and whose carcasses were condemned accordingly."

Two Italian horticulturists propose to prevent the loss of ammonia from stable litter and other organic manures by means of sulphuric acid, employed in the form of a composition which they call "arotol." This is formed by pouring sulphuric acid on dry sawdust, chopped straw or similar vegetable substance. Great heat is evolved, and when that subsides the charred vegetable matter or charcoal, is dried and reduced to powder. This powder is freely sprinkled on the manure, and arrests fermentation. Strict precautions are necessary in its preparation to guard against the corrosive action of the acid.

A French scientist, M. Danysz, has spread destruction among moles by means of disease germs. Having observed great mortality among them he caught thirty, which died within a week from a disease which he found on post-mortem to be infective. From their viscera he prepared tube cultures, which he dissolved in water, and in the solution soaked bread. Pieces of this were scattered in the runs of the rodents. The bait was eaten and the infection thus diffused soon filled the runs with dead moles.

The "agricultural crisis" has called out a very interesting review of Italian agriculture, by Signor Galanti. He states that the area of land under cultivation in Italy is about 60,000,000 acres, of which nearly one-fifth is in wheat, with an annual average yield of about eleven bushels per acre; 5,000,000 acres are devoted to maize, with an average yield of seventeen bushels to the acre; 2,000,000 to leguminous plants, while oats, barley, rye and rice comprise the rest of the cereals. Vines, citrus fruits, olives and other fruits receive much attention. The farm live stock includes 5,000,000 cattle, 6,000,000 sheep, 1,800,000 goats, 1,800,000 swine, 720,000 horses, and 1,300,000 mules and donkeys.

Baboo Probudh Chunder Dey, F. R. H. S., writes to the Journal of the Agri-Horticultural Society of India a detailed account of his experience in the cultivation of potatoes. He acknowledges the kind offices of N. G. Mukerji in furnishing him with seed potatoes, as well as bone meal as a fertilizer, but alleges that he could not trace the least benefit from the use of the bone meal; whereupon Mr. Mukerji rejoins that the bone meal, so far from being useless, promoted the growth of such superior potatoes that the natives came down upon the potato patch at night and abstracted the best tubers from the hills, deftly covering up the evidences of their depredations. Potato culture in India appears to involve other conditions besides those strictly agricultural.

Farming in South Africa has its drawbacks. A correspondent of the *Agricultural Journal* of Cape Town relates some of them. The locusts came late in autumn (May) and devastated the pastures to such an extent that the writer's 1,200 half-starved ewes raised only 260 lambs. Then foot and mouth disease broke out among his cattle, and 15 out of 65 succumbed, being unable in their reduced condition to recover from the debilitating effects of the disease. At the time of writing farmers were trying to harvest their oat-hay, but heavy rains interfered; the grubs had taken three-fourths of the "mealies" (maize or corn) crop, and a new generation of locusts had hatched out, requiring ceaseless effort to check their advance before their wings grew.

Australasia has three ostrich farms, one in New Zealand, one near Port Augusta, Australia, and the third and most successful occupies a square mile of country near Lake Mokarte, Victoria. There are at present 140 birds in various stages of growth. The shearing takes place every quarter. Many of the full-grown birds stand from nine to ten feet in height, and weigh about 300 pounds each. Last year twenty-three ostriches were reared on the farm. In the shearing process the feathers are cut from the bird, the stumps being allowed to remain unti next shearing, when they can be removed without injury. The feathers are roughly classed at the farm, tied up in bundles, and sent to the depot in Melbourne, where they are reclassed and sent to the London market, a good price being obtained for them. The birds are not difficult to manage. They are fed on the natural herbage growing on the farm.

Consul Connolly of Auckland, New Zealand, reports that in the matter of taxation laws that colony excels, in comparison with the other Australian colonies, and perhaps with many older countries. Those laws have been completely revolutionized within the last three years. The aim of the laws is to lay the burdens of taxation as much as possible on those best able to bear them. All improvements up to $15,000 are exempt, and there is a general exemption of $2,500, so that no one pays taxes for State purposes whose property does not exceed that sum. There is a graduated land tax, for estates worth $25,000 to $1,000,000 or more, and a provision for levying twenty per cent. additional in the case of owners who have been absent from the colony for three years or over. The graduated tax may lead to the breaking up of large estates and their sale as farms, while the non-resident tax provides a compensation for the evils of absenteeism. There is an income tax which applies only to incomes of $1,500, or more, per year, with exemptions provided for all the sources of income which are otherwise taxed.

A Chance to Wash.

No work is dirtier than farming at certain seasons of the year, and nothing is more pleasant and necessary than a good chance to bathe, and yet on few farms is there any facility afforded that is worth mentioning. To be sure there is the swimming hole in the river, or the pond or lake, from one to five miles distant, but the opportunity for the farmer and his hands to properly wash off the dust gathered in the field day by day is usually meager. Every farm should have a special room, or separate building, where the hands can bathe daily, or oftener, and wash hands and face three times a day. It should contain two or more wash bowls or basins, a tank from which water may be drawn, a generous foot-tub, and a sprinkler for shower baths. The sprinkler may be supplied by a pipe from the tank, and water for foot and bath tubs should be drawn in the same manner by faucets. The sinks, set bowls and bath tub should have pipes so they may be emptied without trouble. The expense of this plumbing need not be great, and the work may be performed largely by the hands during stormy weather, for on no farm will effort of this kind fail to be appreciated. Every workman feels more comfortable, especially in summer, if he washes up thoroughly at the end of each day's work. Even hands who do not board upon the farm should have the opportunity afforded them before going to their homes.

Some firms in cities believe it to be a good investment for themselves to promote cleanliness and comfort, which means health and strength to their employees. Owners of expensive forge shops have added to one of their buildings a special room with a number of stalls, each furnished with an apparatus for shower baths, where a wash down can be enjoyed in a few minutes. The concern has also provided a big washing tank and wringer, and place for hanging clothes, so that the hands whose clothes are soaked with perspiration may change, wash their garments and hang them to dry before going home at night. This is an operation requiring but a few minutes, but it adds immensely to the comfort and respectability of the men, who fully appreciate it, and the clean, dry clothing which awaits them the following morning. The shower bath may be easily arranged by locating a faucet high up overhead and suspending just beneath it a cheap or half-worn milk pan punched full of fine holes. The faucet must be controlled by two cords over pulleys, which may be made of spools centered on wire nails. The man wishing to enjoy a wash down, or to wet his head, has merely to pull on one of these cords.

HOLLISTER SAGE.

Open Fetlock Joint.—M. S. Juss, Kootenai Co., Idaho, purchased a horse with the humane hope of curing him of a wound or injury of the fetlock joint, which has constantly dropping from it an oily fluid. The joint is greatly swollen, extending to the knee joint. It is deeply scarred, vertically, and is of long standing. The case is a serious one, which would probably baffle the skill of the best veterinarian. Besides, the expense of treatment and of keeping in perfect idleness for a long time would exceed the value of the horse, and the most humane impulse for relief of a valuable animal. Cleanliness, with carbolized hot water and wet bandages of the same, would do something when perfect rest is given for a long time. Thorough washing with borax, an ounce to a quart of hot water, may be used to alternate the carbolic acid and water. Injecting between the deep sinews, after cleansing, hydrogen peroxide, daily and persistently, will prove of essential service where even a cure cannot be expected.

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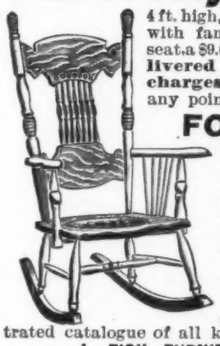

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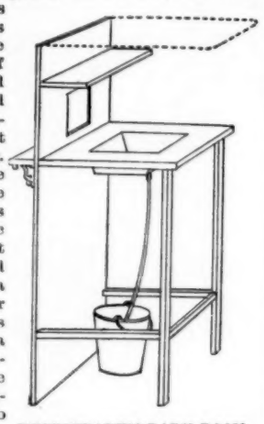

PHOTOGRAPHIC DARK ROOM.

The amateur who cannot neatly do lettering backwards, and who is desirous of having the legend appear on printed views, will find the following method very neat and simple, and one that will not damage the negative. Cut the bottom edge of the paper straight before printing. Then with a pen or very fine camel's hair brush charged with any opaque water color, write on the paper the legend numbers, or whatever is to be written, where it is to appear, and allow it to dry thoroughly before placing on the negative. The color is easily removed with a wet sponge before toning, leaving the legend in white characters on the print.

Another vexatious occurrence to the amateur is to find that the prints, which were made with care a week or so previous, when taken out to be toned, are the color of ancient parchment in those parts that were originally white. If these prints are, just before toning, placed in a bath of one part of aqua ammonia to fifty parts of water, and washed in a similar bath after toning, with another part of the ammonia added to fifty parts of the fixing solution, the white will be restored to its pristine purity when ready to mount.

When any acid has been spilled destroying the color of a fabric, ammonia applied will restore the color, or if on white fabrics wet them thoroughly with ammonia, sprinkle liberally with salt, and place in the sun. When dry all stains will have disappeared from the fabric.

Danger in Unhulled Corn.

Corn in the hull is one of the most pernicious articles of food that can be found upon the tables of our American housewives. There is nothing, not even the prescribed cucumber, that is more harmful to general health than green corn, either fresh or canned, as it is generally used. There certainly is nothing more indigestible nor more irritating to a sensitive stomach than this dish as it is served, and often swallowed without being properly masticated. The whole grains are like so many small marbles, or basswood pellets, upon which the digestive juices have little control, or the action of the stomach much power. They are often the cause of acute inflammation, gastric fevers and other diseases, or complications of diseases with which we must contend, and not always successfully. If housewives would learn to score the rows of corn, scraping out the pulp and leaving the hull where it grew, they would have a healthful, nutritious dish instead of the irritant it is now. It would take the crop and gizzard of a chicken to digest, and assimilate these hulls; and for all the nutriment contained in them, even if they could be digested, we might as well eat the husks or chaff from wheat and expect nourishment as to eat this tenacious covering of "our golden grain." Have you not seen mothers help young children bountifully to the contents of this dish, and then in a day or two send in haste for a doctor, and wonder what is the cause of the sudden illness? All the nice dishes we might enjoy, if properly cooked, such as soups, succotash, fritters, and many others, should have in them only the pulp of the grain; scoring the ears, or rubbing through a colander, if the canned or dried is used. This is one "ounce of prevention," if taken in time.

MRS. B. R. GARVER.

Selecting Declamations.

In countless homes where there are boys and girls of school age, the selection, committing to memory, and actual delivery of recitations or declamations is a family catastrophe as really to be dreaded as the semi-annual period of house-cleaning. Upon the mother or older sister, rather than upon the overworked teacher, should devolve the duty of assisting the youthful orator in his first public appearance. And the ordeal is by no means so terrible as it seems, if the right sort of preparation has been made. In conversation, a thoughtful, enthusiastic man or woman whose head is brimful of ideas which he wishes to share with others, has little difficulty in speaking so as to gain the interested attention of his audience. Many a bashful lad fails unhappily when he first appears on the school platform simply because he has nothing of interest to say and is painfully conscious of the fact. A stirring, bold, eloquent address or an entertaining, graphic description is pretty sure to chain the attention of the listeners and to make the dreaded task comparatively easy.

Let us say, then, that the primary requisite of a successful declamation is that it should be interesting. But all interesting selections are not equally appropriate to the place and the declaimer. If your growing lad is slender, fair-haired and delicate, avoid suggesting "Spartacus' Address to the Gladiators," for example. Some bright girl is sure to laugh at the ridiculous application, and discomfit the young speaker. Select something in line with the boy's interests if possible. A wise mother may clip from the daily papers fragments of political or after-dinner speeches, public addresses on special occasions or even selections from sermons by clergymen of distinguished talent. Beware of thrusting upon a boy's memory a succession of words which mean nothing to him. It is often well to take a single author of oratorical fame, Webster, Clay, Demosthenes, or Cicero, and briefly study his life and his environment at the time a special oration was delivered. Cicero's familiar denunciation of Catiline, and Webster's plea in a famous murder trial, will doubtless be declaimed by boys on the school stage so long as boys and platforms exist. The ringing words make the boy's heart burn with inspiration when he has read all about the Catilinarian conspiracy and the cowardly murder, and when he has learned enough of the life of Cicero or of Webster to understand why the spirit of each was roused to unusual eloquence. It is sometimes well to choose a certain author and make selections for several successive declamations from his writings alone, and so become familiar with his line of argument and general style.

Wide-awake boys are not generally fond of poetry but regard it as the peculiar property of girls. There are numerous poems, however, that might well rouse the enthusiasm of a manly boy and appeal to all that is noble in his character. For example, "The Black Regiment," and Schiller's "Diver." A good mother will rejoice to teach her boy a lesson of patriotism or courage in this way, and the words will be the more easily remembered because of the pleasant swing of the meter. Above all, mother or sister, do take an interest in the lad's state of mind when he comes home and announces, with a disheartened air, that declamation day is coming for him. The effort looks really tremendous to many a nervous boy, but when he has been helped to a selection that is so spirited and interesting that he really longs to recite it and share his own pleasure in it with others, and when he is helped to realize what a power rests with the man who has learned to express himself modestly but intelligently before an audience, half the battle is fought and victory is already assured.

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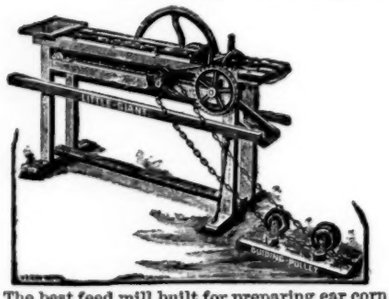

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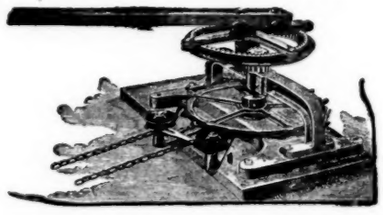

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